

(42)

THE (AMERICAN ECONOMIC REVIEW,

VOLUME LI

March 1961

NUMBER 1

ARTICLES

- Investment in Human Capital 391 .001 T. W. Schultz
- Comparative Advantage and Development Policy H. B. Chenery
- The Differential Effects of Tight Money G. L. Bach and
C. J. Huizenga
- Variability in Earnings—Price Ratios Haskel Benishay

REVIEW ARTICLE

- Financial Intermediaries and Monetary Theory Don Patinkin

COMMUNICATIONS

- The Reform and Revaluation of the Ruble Morris Bornstein
- Some Comments on "Growth" H. H. Villard
- Hospitalization Insurance and Utilization B. A. Weisbrod and
R. J. Fiesler
- The Burden of the Public Debt: Comment William Vickrey
- Comment Tibor Scitovsky
- Comment J. R. Elliott
- Reply W. G. Bowen, R. G. Davis
and D. H. Kopf
- Success of the Elementary Course: Comment C. E. Rockwood
and R. B. Harshbarger
- Reply S. N. Whitney

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1885

OFFICERS

President

PAUL A. SAMUELSON, Massachusetts Institute of Technology

First Vice-President

EDWARD S. MASON, Harvard University

Vice-Presidents

SOLOMON FABRICANT, New York University

RICHARD A. LESTER, Princeton University

Secretary-Treasurer and Editor of Proceedings

JAMES WASHINGTON BELL, Northwestern University

Managing Editor of the American Economic Review

BERNARD F. HALEY, Stanford University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

G. LELAND BACH, Carnegie Institute of Technology

ABRAM L. HARRIS, University of Chicago

J. KENNETH GALBRAITH, Harvard University

RALPH A. YOUNG, Board of Governors, Federal Reserve System

EWAN CLAGUE, U. S. Department of Labor

CHARLES P. KINDLEBERGER, Massachusetts Institute of Technology

Ex-Officio Members

ARTHUR F. BURNS, Columbia University

THEODORE W. SCHULTZ, University of Chicago

Publication and business office at Curtis Reed Plaza, Menasha, Wisconsin.

THE AMERICAN ECONOMIC REVIEW, including four quarterly numbers, the *Proceedings* of the annual meetings, the *Directory* and supplements, is published by the American Economic Association and is sent to all members five times a year, in March, May, June, September and December.

Membership dues of the Association are \$6.00 a year, \$5.00 of each year's dues being in payment of a year's subscription. Subscriptions to the REVIEW by nonmembers are \$6.00 a year. Single copies, \$1.50.

Correspondence relating to the *Papers and Proceedings*, the *Directory*, advertising, permission to quote, business matters, subscriptions, membership and changes of address may be sent to the secretary, James Washington Bell, Northwestern University, Evanston, Illinois. To be effective, notice of change of address must reach the secretary by the 15th of the month previous to the month of publication.

Entered at the post office at Menasha, Wisconsin, as second class matter. Acceptance for mailing at special rate of postage provided for in the Act of February 28, 1925, embodied in paragraph 4, section 412 P. L. and R., under the provisions of Sec. 34-40 Par. (D). Authorized September 13, 1928. Printed in U.S.A. Second-class postage paid at Menasha, Wisconsin.

CUL-110315-42-P242678

THE AMERICAN ECONOMIC REVIEW

VOLUME LI 1961

BOARD OF EDITORS

RENDIGS FELS

MELVIN W. REDER

ARNOLD C. HARBERGER

TIBOR SCITOVSKY

ALFRED E. KAHN

ROBERT SOLOW

JOSEPH A. PECHMAN

WOLFGANG F. STOLPER

MANAGING EDITOR

BERNARD F. HALEY



THE AMERICAN ECONOMIC ASSOCIATION

Executive Office: Evanston, Illinois

Editorial Office: Stanford University, Stanford, California

Copyright 1961
AMERICAN ECONOMIC ASSOCIATION

248.000

CONTENTS

ARTICLES:

Agriculture, The Role of, in Economic Development	B. F. JOHNSTON AND J. W. MELLOR	566
The American Baby Boom in Historical Perspective	R. A. EASTERLIN	869
Comparative Advantage and Development Policy	H. B. CHENERY	18
Earnings-Price Ratios of Corporate Equities, Variability in	HASKEL BENISHAY	81
Economic Development, A Theory of	GUSTAV RANIS AND J. C. H. FEI	533
Industrial Price Control, Problems and Possibilities of: Postwar French Experience	JOHN SHEAHAN	345
Investment in Human Capital	T. W. SCHULTZ	1
Labor Supply, The Cyclical Sensitivity of	W. L. HANSEN	299
Marginal Efficiency Function, The Elasticity of	LORIE TAREHIS	958
Karl Marx and Soviet National Income Theory	VACLAV HOLESOVSKY	325
Money, The Role of, in Trade-Balance Stability: Synthesis of the Elasticity and Absorption Approaches	S. C. TSIANG	912
The Political Economy Club: A Neglected Episode in American Economic Thought	A. W. COATS	624
Prices of Consumers' and Capital Goods, Differential Changes in	R. A. GORDON	937
Residential Construction, The Short Cycle in, 1946-59	J. M. GUTTENTAG	275
The Size Structure of the Largest Industrial Firms 1909-1958	N. R. COLLINS AND L. E. PRESTON	986
Spot and Futures Prices, The Simultaneous Determination of	J. L. STEIN	1012
Stochastic Reserve Losses and Expansion of Bank Credit	DANIEL ORR AND W. G. MEL- LON	614
Tariff Changes, Effect of on the Prices and Volume of Imports	M. E. KREININ	310
Tight Money, The Differential Effects of	G. L. BACH AND C. J. HUIZENGA	52
Welfare Criteria for External Effects	E. J. MISHAN	594

REVIEW ARTICLES:

Equilibrium Growth Models	JOAN ROBINSON	360
Financial Intermediaries and the Logical Structure of Monetary Theory	DON PATINKIN	95

COMMUNICATIONS:

Accumulation, The Golden Rule of: A Fable for Growthmen	EDMUND PHELPS	638
The Bethlehem-Youngstown Case and the Market-Share Criterion	L. S. KEYES	643
Contributors to Three Professional Journals, Institutional Affiliation of the	P. A. YOTOPOULOS	665

Elementary Course, Measuring the Success of the:	
Comment	G. E. ROCKWOOD AND R. B. HARSHBARGER 144
Reply	S. N. WHITNEY 147
Comment	RENDIGS FELS 1044
Foreign Exchange Guarantees and the Dollar	S. T. BEZA AND GARDNER PATTERSON 381
"Growth," Some Comments on	H. H. VILLARD 123
Hospitalization Insurance and Hospital Utilization	B. A. WEISBROD AND B. J. FIESLER 126
Industrial Growth, Patterns of: Comment	BELA BALASSA 394
Investment in Human Capital: Comment	H. G. SHAFFER 1026
Reply	T. W. SCHULTZ 1035
Optimum Currency Areas, A Theory of	R. A. MUNDELL 657
Price Flexibility, A Model of: Comment	W. J. YORDON, JR. 390
Reply	J. V. YANCE 392
Public Debt, The Burden of the: Comment	WILLIAM VICKREY 132
Comment	TIBOR SCITOVSKY 137
Comment	J. R. ELLIOTT 139
Reply	W. G. BOWEN, R. G. DAVIS AND D. H. KOPF 141
Research, Invention, Development and Innovation	EDWARD AMES 370
Revaluation of the Ruble, The Reform and	MORRIS BORNSTEIN 117
Tight Money, The Differential Effects of:	
Comment	DEANE CARSON 1039
Reply	G. L. BACH AND C. J. HUIZENGA 1042
The Wellesley Undergraduate Tutorial	R. V. CLEMENCE 385
Windfall Income and Consumption—Additional Evidence	M. E. KREININ 388

REVIEWS OF BOOKS

ABBOTT, Economics and the Modern World, by F. W. Gery	153
ACKLEY, Macroeconomic Theory, by D. M. Wright	702
ADLER, Recursos financieros y reales para el desarrollo, by J. Grunwald	1078
AMINOV, Ekonomicheskoye razvitiye Sredney Azii (The Economic Development of Central Asia), by A. Kahan	176
ASCHHEIM, Techniques of Monetary Control, by L. S. Ritter	736
ASHWORTH, An Economic History of England 1870-1939, by J. R. T. Hughes	1087
BALASSA, The Hungarian Experience in Economic Planning, by E. Ames	178
BATOR, The Question of Government Spending—Public Needs and Private Wants, by G. F. BREAK	208
BAUMOL, Economic Theory and Operations Analysis, by W. C. Hood	687
BAYER, EDITOR, Wirtschaftsprognose und Wirtschaftsgestaltung, by S. Wasowski ..	421
BENOÎT, Europe at Sixes and Sevens—The Common Market, The Free Trade Association and the United States, by W. J. R. Woodley	1111
BENSUSAN-BUTT, On Economic Growth—An Essay in Pure Theory, by E. D. Domar	1062
BERMAN et al., Projection of a Metropolis: Technical Supplement to the New York Metropolitan Region Study, by F. Shaw	433
BERNSTEIN, The Lean Years—A History of the American Worker, 1920-1933, by J. P. Goldberg	480
BETTELHEIM, Studies in the Theory of Planning, by G. Rosen	731
BLACK, The Diplomacy of Economic Development, by J. D. DeForest	445
BÜHM AND WILLE, Direct Costing und Programmplanung, by E. M. Fels	1112
BOETTCHER, Die sowjetische Wirtschaftspolitik am Scheidewege, by N. Spulver ..	184
BOLINO, The Development of the American Economy, by R. B. Sheridan	1086
BOMBACH, EDITOR, Stabile Preise in wachsender Wirtschaft: Das Inflationsproblem, by F. Machlup	1058
BONBRIGHT, Principles of Public Utility Rates, by E. Schenker	769

BORKAR, Public Finance and Full Employment with Special Reference to Underdeveloped Areas, by C. L. Harriss	205
BOULDING AND SPIVEY, Linear Programming and the Theory of the Firm, by H. Demsetz	685
BOWEN, Wage Behavior in the Postwar World, An Empirical Analysis, by R. J. Lampman	695
BRENNAN, Preface to Econometrics, by A. C. Chiang	192
BROWN, Introduction to the World Economy, by J. D. DeForest	216
BRY, Wages in Germany, 1871-1945, by K. R. Petshek	1120
BUCHANAN, The Public Finances: An Introductory Textbook, by H. E. Brazer ..	751
BUTLER, Labor Economics and Institutions, by E. F. Cheit	1126
CARTER AND SNAVELY, Intermediate Economic Analysis, by S. Schoeffler	1071
CAULEY, Public Finance and the General Welfare, by M. H. Gillim	466
CHELLIAH, Fiscal Policy in Underdeveloped Countries—with Special Reference to India, by C. L. Harriss	205
CHENERY AND CLARK, Interindustry Economics, by T. M. Whittin	160
CLARK, The Wage-Price Problem, by J. A. Pechman	198
CONANT, Antitrust in the Motion Picture Industry, by H. M. Gray	225
COPELAND, Trends in Government Financing, by B. U. Ratchford	748
CREAMER, DOBROVOLSKY AND BORENSTEIN, Capital in Manufacturing and Mining: Its Formation and Financing, by J. M. Mattila	763
CROSSER, State Capitalism in the Economy of the United States, by F. Sethur	453
CSIKOS-NAGY, Problemy tsenoobrazovania i politika tsen (Problems of Price Formation and Price Policy), by V. Holubnychy	1093
DACEY, Money Under Review, by A. R. Sweezy	737
DE BODT, Critique économique du prix de revient industriel, by J. H. Dalton	222
DEBREU, Theory of Value—An Axiomatic Analysis of Economic Equilibrium, by L. Hurwicz	414
DISCHAMPS, Comportements économiques et distorsions fiscales, by J. F. Due	746
DOBB, An Essay on Economic Growth and Planning, by G. M. Meier	715
DORFMAN AND TUGWELL, Early American Policy—Six Columbia Contributors, by A. W. Coats	169
DURR, Fundamentals of Forestry Economics, by W. J. Mead	771
DUNLOP, EDITOR, Potentials of the American Economy—Selected Essays of Sumner H. Slichter, by C. L. Christenson	671
ERDMAN AND ROGGE, Die Europäische Wirtschaftsgemeinschaft und die Drittländer, by R. R. Rhomberg	213
ERLICH, The Soviet Industrialization Debate, 1924-1928, by B. Shoul	1082
EVELY AND LITTLE, Concentration in British Industry, by S. N. Whitney	222
FELLNER, Emergence and Content of Modern Economic Analysis, by K. D. Roose ..	428
FELS, Challenge to the American Economy, by K. A. Knopf	1047
FERRARI, Politica monetaria—evoluzione e aspetti odierni, by F. M. Tamagna	739
FIRESTONE, Marginal Aspects of Management Practices, by E. O. Edwards	218
FLORENCE, Ownership, Control and Success of Large Companies: An Analysis of English Industrial Structure and Policy, 1936-1951, by R. W. Mayer	1115
FOO, Industrial Pricing Policies: An Analysis of Pricing Policies of Danish Manufacturers, by H. H. Hines	425
GALENSON, The CIO Challenge to the AFL, by J. Shister	232
GHOSH, Inflation in an Underdeveloped Economy: A Study of Inflation in India, by W. D. Weatherford	180
GHOSH, Trade Unionism in Underdeveloped Countries, by E. Rosenbaum	235
GOLDBERGER, Impact Multipliers and the Dynamic Properties of the Klein-Goldberger Model, by R. S. Eckaus	183
GOODRICH, Government Promotion of American Canals and Railroads 1800-1890, by J. E. Sawyer	227
GREENHUT, Full Employment, Inflation, and Common Stock, by R. W. Lindholm	781
GREENHUT AND JACKSON, Intermediate Income and Growth Theory, by R. S. Weckstein	1072

GROSSMAN, Soviet Statistics of Physical Output of Industrial Commodities, Their Compilation and Quality, by A. P. Ruderman	189
——, EDITOR, Value and Plan—Economic Calculation and Organization in East- ern Europe, by W. W. Eason	196
GROSSMANN, Die wirtschaftliche Entwicklung der Volksrepublik China, by E. Lengyel	440
GURLEY AND SHAW, Money in a Theory of Finance, by D. Patinkin (a review article)	95
HAAVELMO, A Study in the Theory of Investment, by J. A. Stockfisch	1064
HAINES, Money, Prices, and Policy, by H. S. Gordan	742
HALL, Fiscal Policy for Stable Growth, by F. M. Bator	749
HAMBERG, Principles of a Growing Economy, by J. K. Messing	679
HANSEN, Economic Issues of the 1960's, by M. J. Ulmer	404
HARBERGER, EDITOR, The Demand for Durable Goods, by E. Kuh	164
HARRIS, EDITOR, American Economic History, by H. J. Cranmer	1076
HARRIS, Higher Education in the United States, The Economic Problems, by E. W. Lawson	484
HARRISS, Money and Banking, by E. W. Lawson	1102
HARTOG, Het economische Wereldbestel (The Economic World Order), by W. Gorter 760	
HAZLITT, What You Should Know About Inflation, by H. L. Miller, Jr.	456
HAZLITT, EDITOR, The Critics of Keynesian Economics, by D. Dillard	423
HENDERSON, National Income—Statics and Dynamics, by V. C. Heck	1074
HENEMAN AND OTHERS, EDITORS, Employment Relations Research—A Summary and Appraisal, by I. Bernstein	237
HICKMAN, Growth and Stability of the Postwar Economy, by S. G. Triantis	1066
HICKS, Development from Below: Local Government and Finance in Developing Countries of the Commonwealth, by H. P. Wald	1103
HIRSCHLEIFER, DeHAVEN AND MILLIMAN, Water Supply, Economic Technology and Policy, by O. Eckstein	472
HIRSCHMAN, EDITOR, Latin American Issues—Essays and Comments, by T. A. Sumberg	1080
HITCH AND MCKEAN, The Economics of Defense in the Nuclear Age, by H. J. Barnett	681
HOCHWALD, STRINER AND SONENBLUM, Local Impact of Foreign Trade, a Study in Methods of Local Economic Accounting, by D. D. Humphrey	757
HOLT, MODIGLIANI, MUTH AND SIMON, Planning Production, Inventories, and Work Force, by H. M. Wagner	697
HORSEFIELD, British Monetary Experiments, 1650-1710, by R. B. Sheridan	200
HOSELITZ, Sociological Aspects of Economic Growth, by E. E. Hagen	435
HOSELITZ AND OTHERS, Theories of Economic Growth, by E. Marcus	713
IMBERT, Des mouvements de longue durée Kondratieff, by G. Garvy	1096
ISARD AND ASSOC., Methods of Regional Analysis: An Introduction to Regional Science, by C. C. Bloom	431
ISE, Our National Park Policy: A Critical History, by E. N. Castle	1117
ISLAM, Foreign Capital and Economic Development: Japan, India, and Canada, by D. M. Wright	441
JOCHIMSEN, Ansatzpunkte der Wohlstandsökonomik, by W. Froehlich	1068
JOHANSEN, A Multi-Sectoral Study of Economic Growth, by A. S. Goldberger	436
JOHNSTON, Statistical Cost Analysis, by C. A. Smith	417
KAHN, Personal Deductions in the Federal Income Tax, by R. L. Slighton	463
KALDOR, Essays on Value and Distribution, by W. J. Baumol	409
——, Essays on Economic Stability and Growth, by W. J. Baumol	409
KARLIN, Mathematical Methods and Theory in Games, Programming and Economics. Vol. I, Matrix Games, Programming and Mathematical Economics. Vol. II, The Theory of Infinite Games, by O. Morgenstern	406
KATKOFF, Soviet Economy, 1940-1965, by R. Gibson	730
KATONA, The Powerful Consumer—Psychological Studies of the American Economy, by M. G. Reid	163

KENEN, British Monetary Policy and the Balance of Payments 1951-57, by E. Zupnick	756
KERR, DUNLOP, HARRISON AND MYERS, Industrialism and Industrial Man, by N. W. Chamberlain	475
KHACHATUROV, EDITOR, Ekonomicheskaya effektivnost kapital'nykh vlozhenii i novoi tekhniki (The Economic Effectiveness of Capital Investment and New Technology), by R. W. Judy	193
KIESEWETTER, Der Ostblock, Vol. II—Aussenhandel des östlichen Wirtschaftsblockes einschliesslich China, by H. Mendershausen	728
KILLOUGH, H. B. AND KILLOUGH, L. W., International Economics, by K. J. Rothwell	216
KIRZNER, The Economic Point of View, by W. D. Grampp	170
KLATT, Zur Theorie der Industrialisierung, by B. F. Hoselitz	175
KNOPF AND STAUSS, EDITORS, The Teaching of Elementary Economics, by R. L. Darcy	676
KOZLOV AND PERVUSHIN, EDITORS, Kratkii ekonomicheskii slovar (Short Economic Dictionary), by I. Avakumovic	153
KRAUSE, Economic Development—The Underdeveloped World and the American Interest, by J. D. DeForest	717
KRÜGER, Der Ostblock, Vol. I—Die Produktion des östlichen Wirtschaftsblockes einschliesslich China nach dem Schwerpunktprogramm, by H. Mendershausen ..	728
KURSKIY, Ekonomicheskiye osnovy narodnokhozyaystvennogo planirovaniya v SSSR (Economics of National Economic Planning in the USSR), by T. Sosnovy ..	186
KUZNETS, Six Lectures on Economic Growth, by H. Leibenstein	171
LAMBERT, Les inflations sud-américaines: inflation de sous-développement et inflation de croissance, by M. G. Myers	442
LANDAUER, European Socialism—a History of Ideas and Movements from the Industrial Revolution to Hitler's Seizure of Power, by M. H. Dobb	446
LANGE, Essays on Economic Planning, by R. Varma	734
LEIBENSTEIN, Economic Theory and Organizational Analysis, by R. W. Pfouts ..	161
LEVIN, Broadcast Regulation and Joint Ownership of Media, by P. O. Steiner ..	471
LEVY, Income Tax Exemptions, by R. L. Slighton	463
LONG, Wages and Earnings in the United States 1860-1890, by W. Galenson	233
LYON, Investment Portfolio Management in the Commercial Bank, by A. F. Brimmer	1100
MACHLUP, Der Wettstreit zwischen Mikro- und Makrotheorien in der National-ökonomie, by A. Lowe	151
MALENBAUM, East and West in India's Development, by A. Basch	181
MARGET AND TRIFFIN, Los pagos internacionales y la política monetaria, by O. Herschman	1109
MARQUARDT AND STRUGEL, Der Konjunkturtest—Eine neue Methode der Wirtschaftsbeobachtung, by L. Bosse	199
MARTIN, Mergers and the Clayton Act, by J. B. Hendry	469
MAURICE, Les théories modernes de l'exploitation du travail, by G. Grosschmid ..	777
MCCONNELL, Elementary Economics: Principles, Problems, and Policies, by S. E. Butler	155
MEADE, A Neo-Classical Theory of Economic Growth, by J. Robinson (a review article)	360
MEHTA, Lectures on Modern Economic Theory, by D. V. Plantz	408
MESTMÄKER, EDITOR, Franz Böhm: Reden und Schriften, by R. C. Bernhard	1046
MICHAL, Central Planning in Czechoslovakia, by P. J. Meier	454
MIRABELLA, Política monetaria, by W. G. Welk	202
MOORE, EDITOR, Business Cycle Indicators, by M. Bronfenbrenner	1094
MOORE AND FELDMAN, EDITORS, Labor Commitment and Social Change in Developing Areas, by S. C. Sufrin	775
MORRIS, Fundamentals of Economics, by J. E. Maher	1049
NELSON, EDITOR, Economic Growth—Rationale, Problems, Cases, by C. E. Staley ..	722
NEUBAUER, Finanzreform, by J. Hauptmann	460

NEUNER, The Natural Gas Industry: Monopoly and Competition in Field Markets, by I. M. Stelzer	765
NORTH, The Economic Growth of the United States, 1790-1860, by H. G. Shaffer ..	708
NORTON AND JACOBY, Bank Deposits and Legal Reserve Requirements, by L. V. Conway	458
PERLOFF AND OTHERS, Regions, Resources, and Economic Growth, by M. E. Gardsey	724
PROUTS, EDITOR, Essays in Economics and Econometrics—a Volume in Honor of Harold Hotelling, by A. A. Alchian	157
POWELSON, National Income and Flow-of-Funds Analysis, by E. C. Budd	704
RÄDLER, Die direkten Steuern der Kapitalgesellschaften und die Probleme der Steueranpassung in den sechs Staaten der europäischen Wirtschaftsgemeinschaft, by F. K. Mann	1106
RAMANADHAM, Problems of Public Enterprise—Thoughts on British Experience, by E. K. Zingler	229
REES, Real Wages in Manufacturing 1890-1914, by S. Lebergott	773
RICHARDSON, Information and Investment: A Study in the Working of the Competitive Economy, by J. H. Power	761
ROBINSON, Collected Economic Papers, Volume 2, by M. Bronfenbrenner	413
———, Exercises in Economic Analysis, by R. Clower	701
ROBINSON, EDITOR, The Economic Consequences of the Size of Nations; by G. H. Mattersdorff	467
SALANT AND VACCARA, Import Liberalization and Employment, by M. Kreinin	1107
SALTER, Productivity and Technical Change, by V. E. Smith	159
SARACENO, Iniziativa privata e azione pubblica nei piani di sviluppo economico, by G. H. Hildebrand	173
SCHELLING, The Strategy of Conflict, by R. L. Bishop	674
SCHLESINGER, The Political Economy of National Security, by J. A. Kershaw ..	150
SCHURR AND NETSCHERT, Energy in the American Economy, 1850-1975; Its History and Prospects, by L. G. Hines	1116
SEGAL, Wages in the Metropolis—Their Influence on the Location of Industries in the New York Region, by F. Shaw	234
SELLIER, Stratégie de la lutte sociale: France 1936-1960, by E. Berg	1124
SEN, Choice of Techniques: An Aspect of the Theory of Planned Economic Development, by C. W. Howe	720
SEREBRYAKOV, EDITOR, Ekonomika sovetskoi trgovli, Uchebnoe posobie (The Economics of Soviet Trade—A Textbook), by M. C. Kaser	220
SHONFIELD, The Attack on World Poverty, by J. D. DeForest	438
SEUBIN, Managerial and Industrial Economics, by D. J. Hart	1113
SIEGEL, Aggregate Economics and Public Policy, by J. W. Kendrick	430
SIEGEL AND FOURAKER, Bargaining and Group Decision Making: Experiments in Bilateral Monopoly, by D. Ellsberg	420
SIRKIN, Introduction to Macroeconomic Theory, by D. A. Baerncopf	1075
SMITH, Federal Tax Reform, by C. W. Macy	1105
SOHMEN, Flexible Exchange Rates—Theory and Controversy, by S. Spiegelglas ..	753
SOLOMON AND BILBIJA, Metropolitan Chicago—an Economic Analysis, by L. C. Fitch	187
SOMERS AND SOMERS, Doctors, Patients, and Health Insurance, by M. Roberts ...	1129
SPENCER, India: Mixed Enterprise and Western Business, by D. Thorner	446
SPIEGELMAN, Ensuring Medical Care for the Aged, by W. Haber	485
STRAFFA, Production of Commodities by Means of Commodities, by M. W. Reder ..	688
STIEBER, The Steel Industry Wage Structure—A Study of the Joint Union-Management Job Evaluation Program in the Basic Steel Industry, by S. Barkin	1118
STOLPER, The Structure of the East German Economy, by A. S. Becker	726
STROTZ AND MALINVAUD, EDITORS, <i>Econometrica</i> Essays in Honor of Ragnar Frisch, by M. Nerlove	402
SYLOS-LABINI, Economie capitalistiche ed economie pianificate, by B. Foa	451
TAMAMES, Estructura económica de España, by J. Hein	1085
TAYLOR, A History of Economic Thought, by G. J. Stigler	426

——, The Classical Liberalism, Marxism, and the Twentieth Century, by K. E. Boulding	168
TRESCOTT, Money, Banking, and Economic Welfare, by P. G. Darling	203
TRIFFIN, Gold and the Dollar Crisis—the Future of Convertibility, by P. T. Ellsworth	210
TRIPP, Labor Problems and Processes, by T. Wolfson	1127
TSURU, EDITOR, Has Capitalism Changed? An International Symposium on the Nature of Contemporary Capitalism, by M. E. Dimock	1091
TURVEY, Interest Rates and Asset Prices, by S. Weintraub	699
UEH, Economic Doctrines of Knut Wicksell, by J. F. Bell	427
URQUIDI, Trayectoria del mercado común latinoamericano, by C. M. Flumiani ..	214
VALAVANIS, Econometrics—An Introduction to Maximum Likelihood Methods, by H. Uzawa	190
VERNON, Metropolis 1985—An Interpretation of the Findings of the New York Metropolitan Region Study, by F. Shaw	433
VILLAFUERTE, Ferrocarriles, by R. J. Alexander	230
WATSON, Economic Policy: Business and Government, by B. A. Kemp	767
WEINTRAUB, Classical Keynesianism, Monetary Theory, and the Price Level, by P. W. Cartwright	1056
WERNETTE, Growth and Prosperity Without Inflation, by M. O. Clement	1069
WHETNAM, The Economic Background to Agricultural Policy, by E. Feder	474
WILSON, Inflation, by M. Friedman	1051
Aspectos Monetarios de las Economías Latinoamericanas, 1959, by H. G. Aubrey ..	461
Collective Bargaining in the Basic Steel Industry, by V. D. Kennedy	776
Demographic and Economic Change in Developed Countries—a Conference of the Universities—National Bureau Committee for Economic Research, by S. H. Coontz	779
The Federal Reserve System, Purposes and Functions, 4th ed., by C. A. Matthews	741
Encyclopédie française. Vol. 9, L'univers économique et social, by J. Solterer	398
Government Price Statistics. Pt. I, Hearings before and Report of the Subcommittee on Economic Statistics to the Joint Economic Committee, by A. E. Pierce	1089
1960 Survey of Consumer Finances, by J. L. Weston	1098
Ocherki po istorii narodnogo khoziaistva SSSR (Essays in the Economic History of the USSR), by G. J. Novak	710
Population Redistribution and Economic Growth, United States, 1870-1950. Vol. I, Methodological Considerations and Reference Tables. Vol. II, Analyses of Economic Change, by M. S. Gordon	482
Proceedings, International Conference on Control of Restrictive Business Practices, by M. S. Baratz	224
Public Finances: Needs, Sources and Utilization, by K. E. Poole	744
Trends in the American Economy in the Nineteenth Century. National Bureau of Economic Research, Studies in Income and Wealth, Volume XXIV, by C. Goodrich	706

PAPERS AND PROCEEDINGS

(In May 1961 Number)

ANTITRUST PROBLEMS

The Antimerger Act, 1950-60	M. A. ADELMAN	236
Policy Implications of the Theory of Interfirm Organization	A. PHILLIPS	245
Mergers and Cartels: Some Reservations about Policy	D. DEWEY	255
<i>Discussion</i> by J. W. McKIE, R. E. SLESINGER, J. B. COHEN		263

THE BALANCE OF PAYMENTS OF THE UNITED STATES: PROBLEMS AND PROSPECTS

Disturbances and Adjustments in Recent U. S. Balance-of-Payments Experience	H. B. LARY	417
Unbalanced International Accounts: Diagnosis and Therapy	J. H. FURTH	430
The Adequacy of United States Gold Reserves ...	E. M. BERNSTEIN	439
<i>Discussion</i> by J. BURTLE, P. B. KENEN, J. VANEK		447

CAPITAL THEORY

Capital Theory and Some Theoretical Problems in Development Planning	O. ECKSTEIN	92
Some Theoretical Aspects of Capital Measurement.	J. W. KENDRICK	102
Risk, the Discount Rate, and Investment Deci- sions	J. HIRSELEIFER	112
<i>Discussion</i> by F. M. BATOR, V. L. SMITH, Z. GRILICHES		121

DISTRIBUTION COSTS: CONCEPTS AND MEASURES

How Much Does It Pay Whom to Advertise?	L. G. TELSER	194
Scale, Specialization, and Costs in Retailing	R. H. HOLTON	206
An Interpretation of Changes in Agricultural Mar- keting Costs	F. V. WAUGH AND K. E. OGREN	213
<i>Discussion</i> by W. J. BILKEY, R. COX		228

ECONOMIC DEVELOPMENT IN MAINLAND CHINA

Preliminary Estimate of the National Income of the Chinese Mainland, 1952-59	T. C. LIU AND K. C. YEH	489
Communist China's Statistical System: 1949-57 ...	C. M. LI	499
The Strategy of Economic Development in Com- munist China	A. ECKSTEIN	508
<i>Discussion</i> by F. D. HOLZMAN, S. KLEIN, J. S. BERLINER, T. C. LIU and K. C. YEH		518

ECONOMIC EDUCATION: CHALLENGE TO OUR PROFESSION

This Is Economics in the Schools	P. R. OLSON	564
This Is Economics	H. S. ELLIS	571
Economics in the High Schools: The Responsibility of the Profession	G. L. BACH	579
<i>Discussion</i> by S. PETERSON, E. T. WEILER		587

ECONOMIC INSTABILITY IN OTHER COUNTRIES, PROBLEMS OF

Stability Problems in the Scandinavian Countries • During the Postwar Period	E. LUNDBERG	378
---	-------------------	-----

Growth and Stability in the Postwar Italian Economy	G. H. HILDEBRAND	390
Growth and Stability of the Postwar Japanese Economy	S. TSURU	400
<i>Discussion</i> by G. ACKLEY, L. M. KOYCK		412
FUTURES MARKETS: FRONTIERS IN UNCERTAINTY THEORY		
New Concepts Concerning Futures Markets and Prices	H. WORKING	160
Systematic and Random Elements in Short-Term Price Movements	H. S. HOUTHAKKER	164
Common Elements in Futures Markets for Commodities and Bonds	P. H. COOTNER	173
<i>Discussion</i> by R. P. MACK, M. J. BRENNAN, M. NERLOVE		184
THE GENERAL THEORY		
<i>The General Theory</i> , after Twenty-five Years	H. G. JOHNSON	1
<i>Discussion</i> by D. MCC. WRIGHT, A. P. LERNER, L. R. KLEIN		18
INCOME DISTRIBUTION, MACROECONOMIC THEORIES OF		
Real Versus Price Theories of Distribution	S. WEINTRAUB	62
Effects upon the Distribution of Income of a Tight Money Policy	O. BROWNLEE AND A. CONRAD	74
<i>Discussion</i> by R. W. OZANNE, B. P. PESEK		86
MANAGERIAL ECONOMICS: A NEW FRONTIER?		
The Current State of Managerial Economics	W. W. COOPER	131
What Can Economic Theory Contribute to Managerial Economics?	W. J. BAUMOL	142
What Can Managerial Economics Contribute to Economic Theory?	C. J. HITCH AND R. N. MCKEAN	147
<i>Discussion</i> by J. MARGOLIS, F. MODIGLIANI		155
MONETARY THEORY: NEW AND OLD LOOKS		
Money, Capital, and Other Stores of Value	J. TOBIN	26
Our Knowledge of Monetary Policy	J. H. KAREKEN	38
Some Major Problems in Monetary Theory	K. BRUNNER	47
<i>Discussion</i> by T. MAYER, R. A. MUSGRAVE		57
MORAL AND SOCIAL RESPONSIBILITY, THE INFLUENCE OF, ON ECONOMIC BEHAVIOR		
The Influence of Ethical and Social Responsibilities on Advertising and Selling Practices	C. E. WARNE	527
The Social and Moral Responsibilities of the Executive in the Large Corporation	E. DALE	540
The Influence of Moral and Social Responsibility on Selling Consumer Credit	A. W. TROELSTRUP	549
<i>Discussion</i> by H. M. TEAF, JR., R. T. BYE, D. M. KEEZER		558
NATIONAL SECURITY, ECONOMICS AND		
The Propensity to Reduce the National Debt Out of Defense Savings	E. BENOIT	455
The Importance of Individual Industries for Defense Planning	D. V. T. BEAR AND P. G. CLARK	460
Strategy for Active Defense	T. READ	465
The Crude Analysis of Strategic Choices	D. ELLSBERG	472

Mechanics of Some Limited Disarmament Measures	A. R. FERGUSON	479
PUBLIC UTILITIES AND TRANSPORTATION		
Fully Distributed Costs in Utility Rate Making ..	J. C. BONBRIGHT	305
The Evaluation of Statistical Costing Techniques as Applied in the Transportation Industry	J. R. MEYER AND G. KRAFT ..	313
<i>Discussion</i> by H. T. KOPLIN, D. MARX, JR., R. A. TYBOUT		335
URBAN PROBLEMS, ECONOMIC ANALYSIS OF		
Intra-Urban Location Problems: An Evaluation ..	C. M. TIEBOUT	271
Contrasts in Agglomeration: New York and Pitts- burgh	B. CHINITZ	279
Economic Questions in Urban Redevelopment	L. WINNICK	290
<i>Discussion</i> by B. R. BERMAN, B. HARRIS, I. MORRISSETT		299
WHEAT: A PERMANENT NEED FOR A FARM PROGRAM?		
Wheat and Farm Policy	J. A. SCHNITTKER	341
The Problem Multiplying Effects of Special Wheat Programs	H. C. FARNSWORTH	353
<i>Discussion</i> by J. H. CRAVEN, L. E. FOURAKER, C. A. HICKMAN		371

CONTRIBUTORS:

Leading articles are marked (a); communications (c); papers read at the annual meeting, published in the Papers and Proceedings, separately paged, are marked (p); review articles (r); and all others are book reviews.

- | | |
|---------------------------------------|-------------------------------------|
| Ackley, G. 412 (p) | Cartwright, P. W. 1056 |
| Adelman, M. A. 236 (p) | Castle, E. N. 1117 |
| Alchian, A. A. 157 | Chamberlain, N. W. 475 |
| Alexander, R. J. 230 | Cheit, E. F. 1126 |
| Ames, E. 178, 370 (c) | Chenery, H. B. 18 (a) |
| Aubrey, H. G. 461 | Chiang, A. C. 192 |
| Avakumovic, I. 153 | Chinitz, B. 279 (p) |
| Bach, G. L. 579 (p), 52 (a); 1042 (c) | Christenson, C. L. 671 |
| Baerncopf, D. A. 1075 | Clark, P. G. 460 (p) |
| Balassa, B. 394 (c) | Clemence, R. V. 385 (c) |
| Baratz, M. S. 224 | Clement, M. O. 1069 |
| Barkin, S. 1118 | Clower, R. 701 |
| Barnett, H. J. 681 | Coats, A. W. 169, 624 (a) |
| Basch, A. 181 | Cohen, J. B. 268 (p) |
| Bator, F. M. 121 (p), 749 | Collins, N. R. 986 (a) |
| Baumol, W. J. 142 (p), 409 | Conrad, A. 74 (p) |
| Bear, D. V. T. 460 (p) | Conway, L. V. 458 |
| Becker, A. S. 726 | Coontz, S. H. 779 |
| Bell, J. F. 427 | Cooper, W. W. 131 (p) |
| Benishay, H. 81 (a) | Cootner, P. H. 173 (p) |
| Benoit, E. 455 (p) | Cox, R. 232 (p) |
| Berg, E. J. 1124 | Cranmer, H. J. 1076 |
| Berliner, J. S. 523 (p) | Craven, J. H. 371 (p) |
| Berman, B. R. 299 (p) | Dale, E. 540 (p) |
| Bernhard, R. C. 1046 | Dalton, J. H. 222 |
| Bernstein, E. M. 439 (p) | Darcy, R. L. 676 |
| Bernstein, I. 237 | Darling, P. G. 203 |
| Beza, S. T. 381 (c) | Davis, R. G. 141 (c) |
| Bilkey, W. J. 228 (p) | De Forest, J. D. 216, 438, 445, 717 |
| Bishop, R. L. 674 | Demsetz, H. 685 |
| Bloom, C. C. 431 | Dewey, D. 255 (p) |
| Bonbright, J. C. 305 (p) | Dillard, D. 423 |
| Bornstein, M. 117 (c) | Dimock, M. E. 1091 |
| Bosse, L. 199 | Dobb, M. H. 446 |
| Boulding, K. E. 168 | Domar, E. D. 1062 |
| Bowen, W. G. 141 (c) | Due, J. F. 746 |
| Brazer, H. E. 751 | Eason, W. W. 196 |
| Break, G. F. 208 | Easterlin, R. A. 869 (a) |
| Brennan, M. J. 187 (p) | Eckaus, R. S. 183 |
| Brimmer, A. F. 1100 | Eckstein, A. 508 (p) |
| Bronfenbrenner, M. 413, 1094 | Eckstein, O. 92 (p), 472 |
| Brownlee, O. 74 (p) | Edwards, E. O. 218 |
| Brunner, K. 47 (p) | Elliot, J. R. 139 (c) |
| Budd, E. C. 704 | Ellis, H. S. 571 (p) |
| Burtie, J. 447 (p) | Ellsberg, D. 420, 472 (p) |
| Butler, S. E. 155 | Ellsworth, P. T. 210 |
| Bye, R. T. 560 (p) | Farnsworth, H. C. 353 (p) |
| Carson, D. 1039 (c) | Feder, E. 474 |
| | Fei, J. C. H. 533 (a) |

- Fels, E. M. 1112
 Fels, R. 1044 (c)
 Ferguson, A. R. 479 (p)
 Fiesler, B. J. 126 (c)
 Fitch, L. C. 187
 Flumiani, C. M. 214
 Foa, B. 451
 Fouraker, L. E. 373 (p)
 Friedman, M. 1051
 Froehlich, W. 1068
 Furth, J. H. 430 (p)
 Galenson, W. 233
 Garnsey, M. E. 724
 Garvy, G. 1096
 Gery, F. W. 153
 Gibson, R. 730
 Gillim, M. H. 466
 Goldberg, J. P. 480
 Goldberger, A. S. 436
 Goodrich, C. 706
 Gordman, H. S. 742
 Gordon, M. S. 482
 Gordon, R. A. 937 (a)
 Gorter, W. 760
 Grampp, W. D. 170
 Gray, H. M. 225
 Griliches, Z. 127 (p)
 Grosschmid, G. 777
 Grunwald, J. 1078
 Guttentag, J. M. 275 (a)
 Haber, W. 485
 Hagen, E. E. 435
 Hansen, W. L. 299 (a)
 Harris, B. 301 (p)
 Harriss, C. L. 205
 Harshbarger, R. B. 144 (c)
 Hart, D. J. 1113
 Hauptmann, J. 460
 Heck, V. C. 1074
 Hein, J. 1085
 Hendry, J. B. 469
 Herschman, O. 1109
 Hickman, C. A. 375 (p)
 Hildebrand, G. H. 173, 390 (p)
 Hines, H. H. 425
 Hines, L. G. 1116
 Hirschleifer, J. 112 (p)
 Hitch, C. J. 147 (p)
 Holesovsky, V. 325 (a)
 Holton, R. H. 206 (p)
 Holubnychy, V. 1093
 Holzman, F. D. 518 (p)
 Hood, W. C. 687
 Hoselitz, B. F. 175
 Houthakker, H. S. 464 (p)
 Howe, C. W. 720
 Hughes, J. R. 1087
 Huizenga, C. J. 52 (a), 1042 (c)
 Humphrey, D. D. 757
 Hurwicz, L. 414
 Johnson, H. G. 1 (p)
 Johnston, B. F. 566 (a)
 Judy, R. W. 193
 Kahan, A. 176
 Kareken, J. H. 38 (p)
 Kaser, M. C. 220
 Keezer, D. M. 562 (p)
 Kemp, B. A. 767
 Kendrick, J. W. 102 (p), 430
 Kenen, P. B. 450 (p)
 Kennedy, V. D. 776
 Kershaw, J. A. 150
 Keyes, L. S. 643 (c)
 Klein, L. R. 23 (p)
 Klein, S. 521 (p)
 Knopf, K. A. 1047
 Kopf, D. H. 141 (c)
 Koplin, H. T. 335 (p)
 Koyck, L. M. 414 (p)
 Kraft, G. 313 (p)
 Kreinin, M. E. 310 (a), 388 (c), 1107
 Kuh, E. 164
 Lampman, R. J. 695
 Lary, H. B. 417 (p)
 Lawson, E. W. 484, 1102
 Lebergott, S. 773
 Leibenstein, H. 171
 Lengyel, E. 440
 Lerner, A. P. 20 (p)
 Li, C. M. 499 (p)
 Lindholm, R. W. 781
 Liu, T. C. 489, 525 (p)
 Lowe, A. 151
 Lundberg, E. 378 (p)
 Machlup, F. 1058
 Mack, R. P. 184 (p)
 Macy, C. W. 1105
 Maher, J. E. 1049
 Mann, F. K. 1106
 Marcus, E. 713
 Margolis, J. 155 (p)
 Marx, D., Jr. 337 (p)
 Mattersdorff, G. H. 467
 Matthews, C. A. 741
 Mattila, J. M. 763
 Mayer, R. W. 1115
 Mayer, T. 57 (p)
 McKean, R. N. 147 (p)
 McKie, J. W. 263 (p)
 Mead, W. J. 771
 Meier, G. M. 715
 Meier, P. J. 454
 Mellon, W. G. 614 (a)
 Mellor, J. W. 566 (a)
 Mendershausen, H. 728
 Messing, J. K. 679
 Meyer, J. R. 313 (p)
 Miller, H. L., Jr. 456

Mishan, E. J. 594 (a)
 Modigliani, F. 156 (p)
 Morgenstern, O. 406
 Morrissett, I. 302 (p)
 Mundell, R. A. 657 (c)
 Musgrave, R. A. 59 (p)
 Myers, M. G. 442
 Nerlove, M. 190 (p), 402
 Novak, G. J. 710
 Ogren, K. E. 213 (p)
 Olson, P. R. 564 (p)
 Orr, D. 614 (a)
 Ozanne, R. W. 86 (p)
 Patinkin, D. 95 (r)
 Patterson, G. 381 (c)
 Pechman, J. A. 198
 Pesek, B. P. 88 (p)
 Peterson, S. 587 (p)
 Petshek, K. R. 1120
 Pfouts, R. W. 161
 Phelps, E. 638 (c)
 Phillips, A. 245 (p)
 Pierce, A. E. 1089
 Plantz, D. V. 408
 Poole, K. E. 744
 Power, J. H. 761
 Preston, L. E. 986 (a)
 Ranis, G. 533 (a)
 Ratchford, B. U. 748
 Read, T. 465 (p)
 Reder, M. W. 688
 Reid, M. G. 163
 Rhomberg, R. R. 213
 Ritter, L. S. 736
 Roberts, M. 1129
 Robinson, J. 360 (r)
 Rockwood, G. E. 144 (c)
 Roose, K. D. 428
 Rosen, G. 731
 Rosenbaum, E. 235
 Rothwell, K. J. 216
 Ruderman, A. P. 189
 Sawyer, J. E. 227
 Schenker, E. 769
 Schnittker, J. A. 341 (p)
 Schoeffler, S. 1071
 Schultz, T. W. 1 (a), 1035 (c)
 Scitovsky, T. 137 (c)
 Sethur, F. 453
 Shaffer, H. G. 708, 1026 (c)
 Shaw, F. 234, 433
 Sheahan, J. 345 (a)
 Sheridan, R. B. 200, 1086
 Shister, J. 232
 Shoul, B. 1082
 Slesinger, R. E. 264 (p)
 Slighton, R. L. 463
 Smith, C. A. 417

Smith, V. E. 159
 Smith, V. L. 124 (p)
 Solterer, J. 398
 Sosnovy, T. 186
 Spiegelglas, S. 753
 Spulber, N. 184
 Staley, C. E. 722
 Stein, J. L. 1012 (a)
 Steiner, P. O. 471
 Stelzer, I. M. 765
 Stigler, G. J. 426
 Stockfisch, J. A. 1064
 Sufrin, S. C. 775
 Sumberg, T. A. 1080
 Sweezy, A. R. 737
 Tamagna, F. M. 739
 Tarshis, L. 958 (a)
 Teaf, H. M., Jr. 558 (p)
 Telser, L. G. 194 (p)
 Thorner, D. 446
 Tiebout, C. M. 271 (p)
 Tobin, J. 26 (p)
 Triantis, S. G. 1066
 Troelstrup, A. W. 549 (p)
 Tsiang, S. C. 912 (a)
 Tsuru, S. 400 (p)
 Tybout, R. A. 338 (p)
 Ulmer, M. J. 404
 Uzawa, H. 190
 Vanek, J. 452 (p)
 Varma, R. 734
 Vickrey, W. 132 (c)
 Villard, H. H. 123 (c)
 Wagner, H. M. 697
 Wald, H. P. 1103
 Warne, C. E. 527 (p)
 Wasowski, S. 421
 Waugh, F. V. 213 (p)
 Weatherford, W. D. 180
 Weckstein, R. S. 1072
 Weiler, E. T. 589 (p)
 Weintraub, S. 62 (p), 699
 Weisbrod, B. A. 126 (c)
 Welk, W. G. 202
 Weston, J. L. 1098
 Whitin, T. M. 160
 Whitney, S. N. 147 (c), 222
 Winnick, L. 290 (p)
 Wolfson, T. 1127
 Woodley, W. J. R. 1111
 Working, H. 160 (p)
 Wright, D. McC. 18 (p), 441, 702
 Yance, J. V. 392 (c)
 Yeh, K. C. 489 (p), 523
 Yordon, W. J., Jr. 390 (c)
 Yotopoulos, P. A. 665 (c)
 Zingler, E. K. 229
 Zupnick, E. 756

THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Rendigs Fels
Arnold C. Harberger
Alfred E. Kahn
Joseph A. Pechman

Melvin W. Reder
Tibor Scitovsky
Robert Solow
Wolfgang F. Stolper



Volume LI

MARCH 1961

Number 1

ARTICLES

Investment in Human Capital	<i>T. W. Schultz</i>	1
Comparative Advantage and Development Policy	<i>H. B. Chenery</i>	18
The Differential Effects of Tight Money	<i>G. L. Bach and C. J. Huijsenga</i>	52
Variability in Earnings-Price Ratios of Corporate Equities	<i>Haskel Benishay</i>	81
Financial Intermediaries and the Logical Structure of Monetary Theory (Review Article)	<i>Don Patinkin</i>	95

COMMUNICATIONS

The Reform and Revaluation of the Ruble	<i>Morris Bornstein</i>	117
Some Comments on "Growth"	<i>H. H. Villard</i>	123
Hospitalization Insurance and Hospital Utilization	<i>B. A. Weisbrod and R. J. Fiesler</i>	126
The Burden of the Public Debt:		
Comment	<i>William Vickrey</i>	132
Comment	<i>Tibor Scitovsky</i>	137
Comment	<i>J. R. Elliott</i>	139
Reply	<i>W. G. Bowen, R. G. Davis and D. H. Kopf</i>	141
Measuring the Success of the Elementary Course:		
Comment	<i>C. E. Rockwood and R. B. Harshbarger</i>	144
Reply	<i>S. N. Whitney</i>	147

BOOK REVIEWS

ABBOTT, <i>Economics and the Modern World</i> , by F. W. Gery	153
AMINOV, <i>Ekonomicheskoye razvitiye Sredney Azii</i> (The Economic Development of Central Asia), by A. Kahan	176

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright 1961 by American Economic Association

176

BALASSA, The Hungarian Experience in Economic Planning, by E. Ames	178
BATOR, The Question of Government Spending: Public Needs and Private Wants, by G. F. Break	208
BOETTCHER, Die sowjetische Wirtschaftspolitik am Scheidewege, by N. Spulber	184
BORKAR, Public Finance and Full Employment with Special Reference to Underdevel- oped Areas, by C. L. Harriss	205
BRENNAN, Preface to Econometrics, by A. C. Chiang	192
BROWN, Introduction to the World Economy, by J. D. DeForest	216
CHELLIAH, Fiscal Policy in Underdeveloped Countries, with Special Reference to India, by C. L. Harriss	205
CHEENERY AND CLARK, Interindustry Economics, by T. M. Whittin	160
CLARK, The Wage-Price Problem, by J. A. Pechman	198
CONANT, Antitrust in the Motion Picture Industry, by H. M. Gray	225
DE BODT, Critique économique du prix de revient industriel, by J. H. Dalton	222
DORFMAN AND TUGWELL, Early American Policy: Six Columbia Contributors, by A. W. Coats	169
ERDMAN AND ROGGE, Die Europäische Wirtschaftsgemeinschaft und die Drittländer, by R. R. Rhomberg	213
EVELY AND LITTLE, Concentration in British Industry, by S. N. Whitney	222
FIRESTONE, Marginal Aspects of Management Practices, by E. O. Edwards	218
GALENSON, The CIO Challenge to the AFL, by J. Shister	232
GHOSH, Trade Unionism in Underdeveloped Countries, by E. Rosenbaum	235
GHOSH, Inflation in an Underdeveloped Economy: A Study of Inflation in India, by W. D. Weatherford	180
GOLDBERGER, Impact Multipliers and the Dynamic Properties of the Klein-Goldberger Model, by R. S. Eckaus	183
GOODRICH, Government Promotion of American Canals and Railroads 1800-1890, by J. E. Sawyer	227
GROSSEMAN, Soviet Statistics of Physical Output of Industrial Commodities, Their Compilation and Quality, by A. P. Ruderman	189
—, editor, Value and Plan: Economic Calculation and Organization in Eastern Europe, by W. W. Eason	196
GURLEY AND SHAW, Money in a Theory of Finance, by D. Patinkin (a review article)	95
HARBERGER, editor, The Demand for Durable Goods, by E. Kuh	164
HENEMAN AND OTHERS, editors, Employment Relations Research: A Summary and Appraisal, by I. Bernstein	237
HORSEFIELD, British Monetary Experiments, 1650-1710, by R. B. Sheridan	200
KATONA, The Powerful Consumer: Psychological Studies of the American Economy, by M. G. Reid	163
KHACHATUROV, editor, Ekonomicheskaya effektivnost kapital'nykh vlozhenii i novoi tekhniki (The Economic Effectiveness of Capital Investment and New Technology), by R. W. Judy	193
KILLOUGH, H. B. AND KILLOUGH, L. W., International Economics, by K. J. Rothwell	216
KIRZNER, The Economic Point of View, by W. D. Grampp	170
KLATT, Zur Theorie der Industrialisierung, by B. F. Hoselitz	175
KOZLOV AND PERVUSHIN, editors, Kratkii ekonomicheskii slovar (Short Economic Dic- tionary), by I. Avakumovic	153
KURSKIY, Ekonomicheskiye osnovy narodnokhozyaystvennogo planirovaniya v SSSR (Economics of National Economic Planning in the USSR), by T. Sosnovy	186
KUZNETS, Six Lectures on Economic Growth, by H. Leibenstein	171
LEIBENSTEIN, Economic Theory and Organizational Analysis, by R. W. Pfouts	161
LONG, Wages and Earnings in the United States 1860-1890, by W. Galenson	233
MACHLUP, Der Wettstreit zwischen Mikro- und Makrotheorien in der Nationalökono- mie, by A. Lowe	151
MALENBAUM, East and West in India's Development, by A. Basch	181
MARQUARDT AND SIEGEL, Der Konjunkturtest: Eine neue Methode der Wirtschafts- beobachtung, by L. Bosse	199
MCCONNELL, Elementary Economics: Principles, Problems, and Policies, by S. E. Butler	155
MIRANJALA, Politica monetaria, by W. G. Welk	202

PFOUTS, editor, <i>Essays in Economics and Econometrics—A Volume in Honor of Harold Hotelling</i> , by A. A. Alchian	157
RAMANADHAM, <i>Problems of Public Enterprise—Thoughts on British Experience</i> , by E. K. Zingler	229
SALTER, <i>Productivity and Technical Change</i> , by V. E. Smith	159
SARACENO, <i>Iniziativa privata e azione pubblica nei piani di sviluppo economico</i> , by G. H. Hildebrand	173
SCHLESINGER, <i>The Political Economy of National Security</i> , by J. A. Kershaw	150
SEGAL, <i>Wages in the Metropolis: Their Influence on the Location of Industries in the New York Region</i> , by F. Shaw	234
SEREBRYAKOV, editor, <i>Ekonomika sovetskoi trgovli. Uchebnoe posobie (The Economics of Soviet Trade. A Textbook)</i> , by M. C. Kaser	220
SOLOMON AND BILBIJA, <i>Metropolitan Chicago, An Economic Analysis</i> , by L. C. Fitch	187
TAYLOR, <i>The Classical Liberalism, Marxism, and the Twentieth Century</i> , by K. E. Boulding	168
TRESCOTT, <i>Money, Banking, and Economic Welfare</i> , by P. G. Darling	203
TRIFFIN, <i>Gold and the Dollar Crisis—the Future of Convertibility</i> , by P. T. Ellsworth	210
URQUIDI, <i>Trayectoria del mercado común latinoamericano</i> , by C. M. Flumiani	214
VALAVANIS, <i>Econometrics: An Introduction to Maximum Likelihood Methods</i> , by H. Uzawa	190
VILLAFUERTE, <i>Ferrocarriles</i> , by R. J. Alexander	230
Proceedings, <i>International Conference on Control of Restrictive Business Practices</i> , by M. S. Baratz	224

OTHER DEPARTMENTS

Titles of New Books	239
Periodicals	254
Notes	269

Number 62 of a series of photographs of past presidents of the Association.



Theodore W. Schultz



The American Economic Review

VOLUME LI

MARCH 1961

NUMBER ONE

INVESTMENT IN HUMAN CAPITAL*

By THEODORE W. SCHULTZ

Although it is obvious that people acquire useful skills and knowledge, it is not obvious that these skills and knowledge are a form of capital, that this capital is in substantial part a product of deliberate investment, that it has grown in Western societies at a much faster rate than conventional (nonhuman) capital, and that its growth may well be the most distinctive feature of the economic system. It has been widely observed that increases in national output have been large compared with the increases of land, man-hours, and physical reproducible capital. Investment in human capital is probably the major explanation for this difference.

Much of what we call consumption constitutes investment in human capital. Direct expenditures on education, health, and internal migration to take advantage of better job opportunities are clear examples. Earnings foregone by mature students attending school and by workers acquiring on-the-job training are equally clear examples. Yet nowhere do these enter into our national accounts. The use of leisure time to improve skills and knowledge is widespread and it too is unrecorded. In these and similar ways the *quality* of human effort can be greatly improved and its productivity enhanced. I shall contend that such investment in human capital accounts for most of the impressive rise in the real earnings per worker.

I shall comment, first, on the reasons why economists have shied away from the explicit analysis of investment in human capital, and then, on the capacity of such investment to explain many a puzzle about economic growth. Mainly, however, I shall concentrate on the scope and substance of human capital and its formation. In closing I shall consider some social and policy implications.

* Presidential Address delivered at the Seventy-Third Annual Meeting of the American Economic Association, Saint Louis, December 28, 1960. The author is indebted to his colleagues Milton Friedman, for his very helpful suggestions to gain clarity and cogency, and Harry G. Johnson for pointing out a number of ambiguities.

I. Shying Away from Investment in Man

Economists have long known that people are an important part of the wealth of nations. Measured by what labor contributes to output, the productive capacity of human beings is now vastly larger than all other forms of wealth taken together. What economists have not stressed is the simple truth that people invest in themselves and that these investments are very large. Although economists are seldom timid in entering on abstract analysis and are often proud of being impractical, they have not been bold in coming to grips with this form of investment. Whenever they come even close, they proceed gingerly as if they were stepping into deep water. No doubt there are reasons for being wary. Deep-seated moral and philosophical issues are ever present. Free men are first and foremost the end to be served by economic endeavor; they are not property or marketable assets. And not least, it has been all too convenient in marginal productivity analysis to treat labor as if it were a unique bundle of innate abilities that are wholly free of capital.

The mere thought of investment in human beings is offensive to some among us.¹ Our values and beliefs inhibit us from looking upon human beings as capital goods, except in slavery, and this we abhor. We are not unaffected by the long struggle to rid society of indentured service and to evolve political and legal institutions to keep men free from bondage. These are achievements that we prize highly. Hence, to treat human beings as wealth that can be augmented by investment runs counter to deeply held values. It seems to reduce man once again to a mere material component, to something akin to property. And for man to look upon himself as a capital good, even if it did not impair his freedom, may seem to debase him. No less a person than J. S. Mill at one time insisted that the people of a country should not be looked upon as wealth because wealth existed only for the sake of people [15]. But surely Mill was wrong; there is nothing in the concept of human wealth contrary to his idea that it exists only for the advantage of people. By investing in themselves, people can enlarge the range of choice available to them. It is one way free men can enhance their welfare.

Among the few who have looked upon human beings as capital, there are three distinguished names. The philosopher-economist Adam Smith boldly included all of the acquired and useful abilities of all of the inhabitants of a country as a part of capital. So did H. von Thünen, who then went on to argue that the concept of capital applied to man did not degrade him or impair his freedom and dignity, but on the contrary that the failure to apply the concept was especially pernicious in wars, "... for here ... one will sacrifice in a battle a hundred

¹ This paragraph draws on the introduction to my Teller Lecture [16].

human beings in the prime of their lives without a thought in order to save one gun." The reason is that, "... the purchase of a cannon causes an outlay of public funds, whereas human beings are to be had for nothing by means of a mere conscription decree" [20]. Irving Fisher also clearly and cogently presented an all-inclusive concept of capital [6]. Yet the main stream of thought has held that it is neither appropriate nor practical to apply the concept of capital to human beings. Marshall [11], whose great prestige goes far to explain why this view was accepted, held that while human beings are incontestably capital from an abstract and mathematical point of view, it would be out of touch with the market place to treat them as capital in practical analyses. Investment in human beings has accordingly seldom been incorporated in the formal core of economics, even though many economists, including Marshall, have seen its relevance at one point or another in what they have written.

The failure to treat human resources explicitly as a form of capital, as a produced means of production, as the product of investment, has fostered the retention of the classical notion of labor as a capacity to do manual work requiring little knowledge and skill, a capacity with which, according to this notion, laborers are endowed about equally. This notion of labor was wrong in the classical period and it is patently wrong now. Counting individuals who can and want to work and treating such a count as a measure of the quantity of an economic factor is no more meaningful than it would be to count the number of all manner of machines to determine their economic importance either as a stock of capital or as a flow of productive services.

Laborers have become capitalists not from a diffusion of the ownership of corporation stocks, as folklore would have it, but from the acquisition of knowledge and skill that have economic value [9]. This knowledge and skill are in great part the product of investment and, combined with other human investment, predominantly account for the productive superiority of the technically advanced countries. To omit them in studying economic growth is like trying to explain Soviet ideology without Marx.

II. *Economic Growth from Human Capital*

Many paradoxes and puzzles about our dynamic, growing economy can be resolved once human investment is taken into account. Let me begin by sketching some that are minor though not trivial.

When farm people take nonfarm jobs they earn substantially less than industrial workers of the same race, age, and sex. Similarly non-white urban males earn much less than white males even after allowance is made for the effects of differences in unemployment, age, city.

size and region [21]. Because these differentials in earnings correspond closely to corresponding differentials in education, they strongly suggest that the one is a consequence of the other. Negroes who operate farms, whether as tenants or as owners, earn much less than whites on comparable farms.² Fortunately, crops and livestock are not vulnerable to the blight of discrimination. The large differences in earnings seem rather to reflect mainly the differences in health and education. Workers in the South on the average earn appreciably less than in the North or West and they also have on the average less education. Most migratory farm workers earn very little indeed by comparison with other workers. Many of them have virtually no schooling, are in poor health, are unskilled, and have little ability to do useful work. To urge that the differences in the amount of human investment may explain these differences in earnings seems elementary. Of more recent vintage are observations showing younger workers at a competitive advantage; for example, young men entering the labor force are said to have an advantage over unemployed older workers in obtaining satisfactory jobs. Most of these young people possess twelve years of school, most of the older workers six years or less. The observed advantage of these younger workers may therefore result not from inflexibilities in social security or in retirement programs, or from sociological preference of employers, but from real differences in productivity connected with one form of human investment, i.e., education. And yet another example, the curve relating income to age tends to be steeper for skilled than for unskilled persons. Investment in on-the-job training seems a likely explanation, as I shall note later.

Economic growth requires much internal migration of workers to adjust to changing job opportunities [10]. Young men and women move more readily than older workers. Surely this makes economic sense when one recognizes that the costs of such migration are a form of human investment. Young people have more years ahead of them than older workers during which they can realize on such an investment. Hence it takes less of a wage differential to make it economically advantageous for them to move, or, to put it differently, young people can expect a higher return on their investment in migration than older people. This differential may explain selective migration without requiring an appeal to sociological differences between young and old people.

The examples so far given are for investment in human beings that yield a return over a long period. This is true equally of investment in education, training, and migration of young people. Not all investments in human beings are of this kind; some are more nearly akin to current inputs as for example expenditures on food and shelter in some coun-

² Based on unpublished preliminary results obtained by Joseph Willett in his Ph.D. research at the University of Chicago.

tries where work is mainly the application of brute human force, calling for energy and stamina, and where the intake of food is far from enough to do a full day's work. On the "hungry" steppes and in the teeming valleys of Asia, millions of adult males have so meager a diet that they cannot do more than a few hours of hard work. To call them underemployed does not seem pertinent. Under such circumstances it is certainly meaningful to treat food partly as consumption and partly as a current "producer good," as some Indian economists have done [3]. Let us not forget that Western economists during the early decades of industrialization and even in the time of Marshall and Pigou often connected additional food for workers with increases in labor productivity.

Let me now pass on to three major perplexing questions closely connected with the riddle of economic growth. First, consider the long-period behavior of the capital-income ratio. We were taught that a country which amassed more reproducible capital relative to its land and labor would employ such capital in greater "depth" because of its growing abundance and cheapness. But apparently this is not what happens. On the contrary, the estimates now available show that less of such capital tends to be employed relative to income as economic growth proceeds. Are we to infer that the ratio of capital to income has no relevance in explaining either poverty or opulence? Or that a rise of this ratio is not a prerequisite to economic growth? These questions raise fundamental issues bearing on motives and preferences for holding wealth as well as on the motives for particular investments and the stock of capital thereby accumulated. For my purpose all that needs to be said is that these estimates of capital-income ratios refer to only a part of all capital. They exclude in particular, and most unfortunately, any human capital. Yet human capital has surely been increasing at a rate substantially greater than reproducible (nonhuman) capital. We cannot, therefore, infer from these estimates that the stock of *all* capital has been decreasing relative to income. On the contrary, if we accept the not implausible assumption that the motives and preferences of people, the technical opportunities open to them, and the uncertainty associated with economic growth during particular periods were leading people to maintain roughly a constant ratio between *all* capital and income, the decline in the estimated capital-income ratio³ is simply a signal that human capital has been increasing relatively not only to conventional capital but also to income.

The bumper crop of estimates that show national income increas-

³ I leave aside here the difficulties inherent in identifying and measuring both the non-human capital and the income entering into estimates of this ratio. There are index number and aggregation problems aplenty, and not all improvements in the quality of this capital have been accounted for, as I shall note later.

ing faster than national resources raises a second and not unrelated puzzle. The income of the United States has been increasing at a much higher rate than the combined amount of land, man-hours worked and the stock of reproducible capital used to produce the income. Moreover, the discrepancy between the two rates has become larger from one business cycle to the next during recent decades [5]. To call this discrepancy a measure of "resource productivity" gives a name to our ignorance but does not dispel it. If we accept these estimates, the connections between national resources and national income have become loose and tenuous over time. Unless this discrepancy can be resolved, received theory of production applied to inputs and outputs as currently measured is a toy and not a tool for studying economic growth.

Two sets of forces probably account for the discrepancy, if we neglect entirely the index number and aggregation problems that bedevil all estimates of such global aggregates as total output and total input. One is returns to scale; the second, the large improvements in the quality of inputs that have occurred but have been omitted from the input estimates. Our economy has undoubtedly been experiencing increasing returns to scale at some points offset by decreasing returns at others. If we can succeed in identifying and measuring the net gains, they may turn out to have been substantial. The improvements in the quality of inputs that have not been adequately allowed for are no doubt partly in material (nonhuman) capital. My own conception, however, is that both this defect and the omission of economies of scale are minor sources of discrepancy between the rates of growth of inputs and outputs compared to the improvements in human capacity that have been omitted.

A small step takes us from these two puzzles raised by existing estimates to a third which brings us to the heart of the matter, namely the essentially unexplained large increase in real earnings of workers. Can this be a windfall? Or a quasirent pending the adjustment in the supply of labor? Or, a pure rent reflecting the fixed amount of labor? It seems far more reasonable that it represents rather a return to the investment that has been made in human beings. The observed growth in productivity per unit of labor is simply a consequence of holding the unit of labor constant over time although in fact this unit of labor has been increasing as a result of a steadily growing amount of human capital per worker. As I read our record, the human capital component has become very large as a consequence of human investment.

Another aspect of the same basic question, which admits of the same resolution, is the rapid postwar recovery of countries that had suffered severe destruction of plant and equipment during the war. The toll from bombing was all too visible in the factories laid flat, the railroad

yards, bridges, and harbors wrecked, and the cities in ruin. Structures, equipment and inventories were all heaps of rubble. Not so visible, yet large, was the toll from the wartime depletion of the physical plant that escaped destruction by bombs. Economists were called upon to assess the implications of these wartime losses for recovery. In retrospect, it is clear that they overestimated the prospective retarding effects of these losses. Having had a small hand in this effort, I have had a special reason for looking back and wondering why the judgments that we formed soon after the war proved to be so far from the mark. The explanation that now is clear is that we gave altogether too much weight to nonhuman capital in making these assessments. We fell into this error, I am convinced, because we did not have a concept of *all* capital and, therefore, failed to take account of human capital and the important part that it plays in production in a modern economy.

Let me close this section with a comment on poor countries, for which there are virtually no solid estimates. I have been impressed by repeatedly expressed judgments, especially by those who have a responsibility in making capital available to poor countries, about the low rate at which these countries can absorb additional capital. New capital from outside can be put to good use, it is said, only when it is added "slowly and gradually." But this experience is at variance with the widely held impression that countries are poor fundamentally because they are starved for capital and that additional capital is truly the key to their more rapid economic growth. The reconciliation is again, I believe, to be found in emphasis on particular forms of capital. The new capital available to these countries from outside as a rule goes into the formation of structures, equipment and sometimes also into inventories. But it is generally not available for additional investment in man. Consequently, human capabilities do not stay abreast of physical capital, and they do become limiting factors in economic growth. It should come as no surprise, therefore, that the absorption rate of capital to augment only particular nonhuman resources is necessarily low. The Horvat [8] formulation of the optimum rate of investment which treats knowledge and skill as a critical investment variable in determining the rate of economic growth is both relevant and important.

III. Scope and Substance of These Investments

What are human investments? Can they be distinguished from consumption? Is it at all feasible to identify and measure them? What do they contribute to income? Granted that they seem amorphous compared to brick and mortar, and hard to get at compared to the investment accounts of corporations, they assuredly are not a fragment;

they are rather like the contents of Pandora's box, full of difficulties and hope.

Human resources obviously have both quantitative and qualitative dimensions. The number of people, the proportion who enter upon useful work, and hours worked are essentially quantitative characteristics. To make my task tolerably manageable, I shall neglect these and consider only such quality components as skill, knowledge, and similar attributes that affect particular human capabilities to do productive work. In so far as expenditures to enhance such capabilities also increase the value productivity of human effort (labor), they will yield a positive rate of return.⁴

How can we estimate the magnitude of human investment? The practice followed in connection with physical capital goods is to estimate the magnitude of capital formation by expenditures made to produce the capital goods. This practice would suffice also for the formation of human capital. However, for human capital there is an additional problem that is less pressing for physical capital goods: how to distinguish between expenditures for consumption and for investment. This distinction bristles with both conceptual and practical difficulties. We can think of three classes of expenditures: expenditures that satisfy consumer preferences and in no way enhance the capabilities under discussion—these represent pure consumption; expenditures that enhance capabilities and do not satisfy any preferences underlying consumption—these represent pure investment; and expenditures that have both effects. Most relevant activities clearly are in the third class, partly consumption and partly investment, which is why the task of identifying each component is so formidable and why the measurement of capital formation by expenditures is less useful for human investment than for investment in physical goods. In principle there is an alternative method for estimating human investment, namely by its yield rather than by its cost. While any capability produced by human investment becomes a part of the human agent and hence cannot be sold; it is nevertheless "in touch with the market place" by affecting the wages and salaries the human agent can earn. The resulting increase in earnings is the yield on the investment.⁵

Despite the difficulty of exact measurement at this stage of our understanding of human investment, many insights can be gained by examining some of the more important activities that improve human

⁴Even so, our *observed* return can be either negative, zero or positive because our observations are drawn from a world where there is uncertainty and imperfect knowledge and where there are windfall gains and losses and mistakes aplenty.

⁵In principle, the value of the investment can be determined by discounting the additional future earnings it yields just as the value of a physical capital good can be determined by discounting its income stream.

capabilities. I shall concentrate on five major categories: (1) health facilities and services, broadly conceived to include all expenditures that affect the life expectancy, strength and stamina, and the vigor and vitality of a people; (2) on-the-job training, including old-style apprenticeship organized by firms; (3) formally organized education at the elementary, secondary, and higher levels; (4) study programs for adults that are not organized by firms, including extension programs notably in agriculture; (5) migration of individuals and families to adjust to changing job opportunities. Except for education, not much is known about these activities that is germane here. I shall refrain from commenting on study programs for adults, although in agriculture the extension services of the several states play an important role in transmitting new knowledge and in developing skills of farmers [17]. Nor shall I elaborate further on internal migration related to economic growth.

Health activities have both quantity and quality implications. Such speculations as economists have engaged in about the effects of improvements in health,⁶ has been predominantly in connection with population growth, which is to say with quantity. But surely health measures also enhance the quality of human resources. So also may additional food and better shelter, especially in underdeveloped countries.

The change in the role of food as people become richer sheds light on one of the conceptual problems already referred to. I have pointed out that extra food in some poor countries has the attribute of a "producer good." This attribute of food, however, diminishes as the consumption of food rises, and there comes a point at which any further increase in food becomes pure consumption.⁷ Clothing, housing and perhaps medical services may be similar.

My comment about on-the-job training will consist of a conjecture on the amount of such training, a note on the decline of apprenticeship, and then a useful economic theorem on who bears the costs of such training. Surprisingly little is known about on-the-job training in modern industry. About all that can be said is that the expansion of education has not eliminated it. It seems likely, however, that some of the training formerly undertaken by firms has been discontinued and other training programs have been instituted to adjust both to the

⁶Health economics is in its infancy; there are two medical journals with "economics" in their titles, two bureaus for economic research in private associations (one in the American Medical and the other in the American Dental Association), and not a few studies and papers by outside scholars. Selma Mushkin's survey is very useful with its pertinent economic insights, though she may have underestimated somewhat the influence of the economic behavior of people in striving for health [14].

⁷For instance, the income elasticity of the demand for food continues to be positive even after the point is reached where additional food no longer has the attribute of a "producer good."

rise in the education of workers and to changes in the demands for new skills. The amount invested annually in such training can only be a guess. H. F. Clark places it near to equal to the amount spent on formal education.⁸ Even if it were only one-half as large, it would represent currently an annual gross investment of about \$15 billion. Elsewhere, too, it is thought to be important. For example, some observers have been impressed by the amount of such training under way in plants in the Soviet Union.⁹ Meanwhile, apprenticeship has all but disappeared, partly because it is now inefficient and partly because schools now perform many of its functions. Its disappearance has been hastened no doubt by the difficulty of enforcing apprenticeship agreements. Legally they have come to smack of indentured service. The underlying economic factors and behavior are clear enough. The apprentice is prepared to serve during the initial period when his productivity is less than the cost of his keep and of his training. Later, however, unless he is legally restrained, he will seek other employment when his productivity begins to exceed the cost of keep and training, which is the period during which a master would expect to recoup on his earlier outlay.

To study on-the-job training Gary Becker [1] advances the theorem that in competitive markets employees pay all the costs of their training and none of these costs are ultimately borne by the firm. Becker points out several implications. The notion that expenditures on training by a firm generate external economies for other firms is not consistent with this theorem. The theorem also indicates one force favoring the transfer from on-the-job training to attending school. Since on-the-job training reduces the net earnings of workers at the beginning and raises them later on, this theorem also provides an explanation for the "steeper slope of the curve relating income to age," for skilled than unskilled workers, referred to earlier.¹⁰ What all this adds up to is that the stage is set to undertake meaningful economic studies of on-the-job training.

Happily we reach firmer ground in regard to education. Investment in education has risen at a rapid rate and by itself may well account for a substantial part of the otherwise unexplained rise in earnings. I shall do no more than summarize some preliminary results about the total costs of education including income foregone by students, the apparent relation of these costs to consumer income and to alternative invest-

⁸ Based on comments made by Harold F. Clark at the Merrill Center for Economics, summer 1959; also, see [4].

⁹ Based on observations made by a team of U. S. economists of which I was a member, see *Saturday Rev.*, Jan. 21, 1961.

¹⁰ Becker has also noted still another implication arising out of the fact that the income and capital investment aspects of on-the-job training are tied together, which gives rise to "permanent" and "transitory" income effects that may have substantial explanatory value.

ments, the rise of the stock of education in the labor force, returns to education, and the contribution that the increase in the stock of education may have made to earnings and to national income.

It is not difficult to estimate the conventional costs of education consisting of the costs of the services of teachers, librarians, administrators, of maintaining and operating the educational plant, and interest on the capital embodied in the educational plant. It is far more difficult to estimate another component of total cost, the income foregone by students. Yet this component should be included and it is far from negligible. In the United States, for example, well over half of the costs of higher education consists of income foregone by students. As early as 1900, this income foregone accounted for about one-fourth of the total costs of elementary, secondary and higher education. By 1956, it represented over two-fifths of all costs. The rising significance of foregone income has been a major factor in the marked upward trend in the total real costs of education which, measured in current prices, increased from \$400 million in 1900 to \$28.7 billion in 1956 [18]. The percentage rise in educational costs was about three and a half times as large as in consumer income, which would imply a high income elasticity of the demand for education, if education were regarded as pure consumption.¹¹ Educational costs also rose about three and a half times as rapidly as did the gross formation of physical capital in dollars. If we were to treat education as pure investment this result would suggest that the returns to education were relatively more attractive than those to nonhuman capital.¹²

Much schooling is acquired by persons who are not treated as income earners in most economic analysis, particularly, of course, women. To analyze the effect of growth in schooling on earnings, it is therefore necessary to distinguish between the stock of education in the population and the amount in the labor force. Years of school completed are far from satisfactory as a measure because of the marked increases that have taken place in the number of days of school attendance of enrolled students and because much more of the education of workers consists of high school and higher education than formerly. My preliminary estimates suggest that the stock of education in the labor force rose about eight and a half times between 1900 and 1956, whereas the stock of reproducible capital rose four and a half times, both in 1956 prices. These estimates are, of course, subject to many

¹¹ Had other things stayed constant this suggests an income elasticity of 3.5. Among the things that did change, the prices of educational services rose relative to other consumer prices, perhaps offset in part by improvements in the quality of educational services.

¹² This of course assumes among other things that the relationship between gross and net have not changed or have changed in the same proportion. Estimates are from my essay, "Education and Economic Growth" [19].

qualifications.¹³ Nevertheless, both the magnitude and the rate of increase of this form of human capital have been such that they could be an important key to the riddle of economic growth.¹⁴

The exciting work under way is on the return to education. In spite of the flood of high school and college graduates, the return has not become trivial. Even the lower limits of the estimates show that the return to such education has been in the neighborhood of the return to nonhuman capital. This is what most of these estimates show when they treat as costs all of the public and private expenditures on education and also the income foregone while attending school, and when they treat all of these costs as investment, allocating none to consumption.¹⁵ But surely a part of these costs are consumption in the sense that education creates a form of consumer capital¹⁶ which has the attribute of

¹³ From [19, Sec. 4]. These estimates of the stock of education are tentative and incomplete. They are incomplete in that they do not take into account fully the increases in the average life of this form of human capital arising out of the fact that relatively more of this education is held by younger people in the labor force than was true in earlier years; and, they are incomplete because no adjustment has been made for the improvements in education over time, increasing the quality of a year of school in ways other than those related to changes in the proportions represented by elementary, high school and higher education. Even so the stock of this form of human capital rose 8.5 times between 1900 and 1956 while the stock of reproducible nonhuman capital increased only 4.5 times, both in constant 1956 prices.

¹⁴ In value terms this stock of education was only 22 per cent as large as the stock of reproducible physical capital in 1900, whereas in 1956 it already had become 42 per cent as large.

¹⁵ Several comments are called for here. (1) The return to high school education appears to have declined substantially between the late 'thirties and early 'fifties and since then has leveled off, perhaps even risen somewhat, indicating a rate of return toward the end of the 'fifties about as high as that to higher education. (2) The return to college education seems to have risen somewhat since the late 'thirties in spite of the rapid influx of college-trained individuals into the labor force. (3) Becker's estimates based on the difference in income between high school and college graduates based on urban males adjusted for ability, race, unemployment and mortality show a return of 9 per cent to total college costs including both earnings foregone and conventional college costs, public and private and with none of these costs allocated to consumption (see his paper given at the American Economic Association meeting, December 1959 [21]). (4) The returns to this education in the case of nonwhite urban males, of rural males, and of females in the labor force may have been somewhat lower (see Becker [2]). (5) My own estimates, admittedly less complete than those of Becker and thus subject to additional qualifications, based mainly on lifetime income estimates of Herman P. Miller [12], lead to a return of about 11 per cent to both high school and college education as of 1958. See [19, Sec. 5].

Whether the consumption component in education will ultimately dominate, in the sense that the investment component in education will diminish as these expenditures increase and a point will be reached where additional expenditures for education will be pure consumption (a zero return on however small a part one might treat as an investment), is an interesting speculation. This may come to pass, as it has in the case of food and shelter, but that eventuality appears very remote presently in view of the prevailing investment value of education and the new demands for knowledge and skill inherent in the nature of our technical and economic progress.

¹⁶ The returns on this consumer capital will not appear in the wages and salaries that people earn.

improving the taste and the quality of consumption of students throughout the rest of their lives. If one were to allocate a substantial fraction of the total costs of this education to consumption, say one-half, this would, of course, double the observed rate of return to what would then become the investment component in education that enhances the productivity of man.

Fortunately, the problem of allocating the costs of education in the labor force between consumption and investment does not arise to plague us when we turn to the contribution that education makes to earnings and to national income because a change in allocation only alters the rate of return, not the total return. I noted at the outset that the unexplained increases in U. S. national income have been especially large in recent decades. On one set of assumptions, the unexplained part amounts to nearly three-fifths of the total increase between 1929 and 1956.¹⁷ How much of this unexplained increase in income represents a return to education in the labor force? A lower limit suggests that about three-tenths of it, and an upper limit does not rule out that more than one-half of it came from this source.¹⁸ These estimates also imply that between 36 and 70 per cent of the hitherto unexplained rise in the earnings of labor is explained by returns to the additional education of workers.

IV. *A Concluding Note on Policy*

One proceeds at his own peril in discussing social implications and policy. The conventional hedge is to camouflage one's values and to wear the mantle of academic innocence. Let me proceed unprotected!

1. Our tax laws everywhere discriminate against human capital. Although the stock of such capital has become large and even though it is obvious that human capital, like other forms of reproducible capital, depreciates, becomes obsolete, and entails maintenance, our tax laws are all but blind on these matters.

2. Human capital deteriorates when it is idle because unemployment impairs the skills that workers have acquired. Losses in earnings can be cushioned by appropriate payments but these do not keep idleness from taking its toll from human capital.

3. There are many hindrances to the free choice of professions.

¹⁷ Real income doubled, rising from \$150 to \$302 billion in 1956 prices. Eighty-nine billions of the increase in real income is taken to be unexplained, or about 59 per cent of the total increase. The stock of education in the labor force rose by \$355 billion of which \$69 billion is here allocated to the growth in the labor force to keep the per-worker stock of education constant, and \$286 billion represents the increase in the level of this stock. See [19, Sec. 6] for an elaboration of the method and the relevant estimates.

¹⁸ In per cent, the lower estimate came out to 29 per cent and the upper estimate to 56 per cent.

Racial discrimination and religious discrimination are still widespread. Professional associations and governmental bodies also hinder entry; for example, into medicine. Such purposeful interference keeps the investment in this form of human capital substantially below its optimum [7].

4. It is indeed elementary to stress the greater imperfections of the capital market in providing funds for investment in human beings than for investment in physical goods. Much could be done to reduce these imperfections by reforms in tax and banking laws and by changes in banking practices. Long-term private and public loans to students are warranted.

5. Internal migration, notably the movement of farm people into industry, made necessary by the dynamics of our economic progress, requires substantial investments. In general, families in which the husbands and wives are already in the late thirties cannot afford to make these investments because the remaining payoff period for them is too short. Yet society would gain if more of them would pull stakes and move because, in addition to the increase in productivity currently, the children of these families would be better located for employment when they were ready to enter the labor market. The case for making some of these investments on public account is by no means weak. Our farm programs have failed miserably these many years in not coming to grips with the costs and returns from off-farm migration.

6. The low earnings of particular people have long been a matter of public concern. Policy all too frequently concentrates only on the effects, ignoring the causes. No small part of the low earnings of many Negroes, Puerto Ricans, Mexican nationals, indigenous migratory farm workers, poor farm people and some of our older workers, reflects the failure to have invested in their health and education. Past mistakes are, of course, bygones, but for the sake of the next generation we can ill afford to continue making the same mistakes over again.

7. Is there a substantial underinvestment in human beings other than in these depressed groups? [2] This is an important question for economists. The evidence at hand is fragmentary. Nor will the answer be easily won. There undoubtedly have been overinvestments in some skills, for example, too many locomotive firemen and engineers, too many people trained to be farmers, and too many agricultural economists! Our schools are not free of loafers and some students lack the necessary talents. Nevertheless, underinvestment in knowledge and skill, relative to the amounts invested in nonhuman capital would appear to be the rule and not the exception for a number of reasons. The strong and increasing demands for this knowledge and skill in laborers are of fairly recent origin and it takes time to respond to them. In re-

sponding to these demands, we are heavily dependent upon cultural and political processes, and these are slow and the lags are long compared to the behavior of markets serving the formation of nonhuman capital. Where the capital market does serve human investments, it is subject to more imperfections than in financing physical capital. I have already stressed the fact that our tax laws discriminate in favor of nonhuman capital. Then, too, many individuals face serious uncertainty in assessing their innate talents when it comes to investing in themselves, especially through higher education. Nor is it easy either for public decisions or private behavior to untangle and properly assess the consumption and the investment components. The fact that the return to high school and to higher education has been about as large as the return to conventional forms of capital when all of the costs of such education including income foregone by students are allocated to the investment component, creates a strong presumption that there has been underinvestment since, surely, much education is cultural and in that sense it is consumption. It is no wonder, in view of these circumstances, that there should be substantial underinvestment in human beings, even though we take pride, and properly so, in the support that we have given to education and to other activities that contribute to such investments.

8. Should the returns from public investment in human capital accrue to the individuals in whom it is made?¹⁹ The policy issues implicit in this question run deep and they are full of perplexities pertaining both to resource allocation and to welfare. Physical capital that is formed by public investment is not transferred as a rule to particular individuals as a gift. It would greatly simplify the allocative process if public investment in human capital were placed on the same footing. What then is the logical basis for treating public investment in human capital differently? Presumably it turns on ideas about welfare. A strong welfare goal of our community is to reduce the unequal distribution of personal income among individuals and families. Our community has relied heavily on progressive income and inheritance taxation. Given public revenue from these sources, it may well be true that public investment in human capital, notably that entering into general education, is an effective and efficient set of expenditures for attaining this goal. Let me stress, however, that the state of knowledge about these issues is woefully meager.

9. My last policy comment is on assistance to underdeveloped countries to help them achieve economic growth. Here, even more than in domestic affairs, investment in human beings is likely to be underrated

¹⁹I am indebted to Milton Friedman for bringing this issue to the fore in his comments on an early draft of this paper. See preface of [7] and also Jacob Mincer's pioneering paper [13].

and neglected. It is inherent in the intellectual climate in which leaders and spokesmen of many of these countries find themselves. Our export of growth doctrines has contributed. These typically assign the stellar role to the formation of nonhuman capital, and take as an obvious fact the superabundance of human resources. Steel mills are the real symbol of industrialization. After all, the early industrialization of England did not depend on investments in the labor force. New funds and agencies are being authorized to transfer capital for physical goods to these countries. The World Bank and our Export-Import Bank have already had much experience. Then, too, measures have been taken to pave the way for the investment of more private (nonhuman) capital abroad. This one-sided effort is under way in spite of the fact that the knowledge and skills required to take on and use efficiently the superior techniques of production, the most valuable resource that we could make available to them, is in very short supply in these underdeveloped countries. Some growth of course can be had from the increase in more conventional capital even though the labor that is available is lacking both in skill and knowledge. But the rate of growth will be seriously limited. It simply is not possible to have the fruits of a modern agriculture and the abundance of modern industry without making large investments in human beings.

Truly, the most distinctive feature of our economic system is the growth in human capital. Without it there would be only hard, manual work and poverty except for those who have income from property. There is an early morning scene in Faulkner's *Intruder in the Dust*, of a poor, solitary cultivator at work in a field. Let me paraphrase that line, "The man without skills and knowledge leaning terrifically against nothing."

REFERENCES

1. G. S. BECKER, preliminary draft of study undertaken for Nat. Bur. Econ. Research. New York 1960.
2. ———, "Underinvestment in College Education?," *Proc., Am. Econ. Rev.*, May 1960, 50, 346-54.
3. P. R. BRAHMANAND AND C. N. VAKIL, *Planning for an Expanding Economy*. Bombay 1956.
4. H. F. CLARK, "Potentialities of Educational Establishments Outside the Conventional Structure of Higher Education," *Financing Higher Education, 1960-70*, D. M. Keezer, ed. New York 1959.
5. SOLOMON FABRICANT, *Basic Facts on Productivity Change*, Nat. Bur. Econ. Research, Occas. Paper 63. New York 1959. Table 5.
6. IRVING FISHER, *The Nature of Capital and Income*. New York 1906.
7. MILTON FRIEDMAN AND SIMON KUZNETS, *Income from Independent Professional Practice*, Nat. Bur. Econ. Research. New York 1945.

8. B. HORVAT, "The Optimum Rate of Investment," *Econ. Jour.*, Dec. 1958, 68, 747-67.
9. H. G. JOHNSON, "The Political Economy of Opulence," *Can. Jour. Econ. and Pol. Sci.*, Nov. 1960, 26, 552-64.
10. SIMON KUZNETS, *Income and Wealth in the United States*. Cambridge, England 1952. Sec. IV, Distribution by Industrial Origin.
11. ALFRED MARSHALL, *Principles of Economics*, 8th ed. London 1930. App. E, pp. 787-88.
12. H. P. MILLER, "Annual and Lifetime Income in Relation to Education: 1939-1959," *Am. Econ. Rev.*, Dec. 1960, 50, 962-86.
13. JACOB MINCER, "Investment in Human Capital and Personal Income Distribution," *Jour. Pol. Econ.*, Aug. 1958, 66, 281-302.
14. S. J. MUSHKIN, "Toward a Definition of Health Economics," *Public Health Reports*, U. S. Dept. of Health, Educ. and Welfare, Sept. 1958, 73, 785-93.
15. J. S. NICHOLSON, "The Living Capital of the United Kingdom," *Econ. Jour.*, Mar. 1891, 1, 95; see J. S. Mill, *Principles of Political Economy*, ed. W. J. Ashley, London 1909, p. 8.
16. T. W. SCHULTZ, "Investment in Man: An Economist's View," *Soc. Serv. Rev.*, June 1959, 33, 109-17.
17. ———, "Agriculture and the Application of Knowledge," *A Look to the Future*, W. K. Kellogg Foundation, Battle Creek, 1956, 54-78.
18. ———, "Capital Formation by Education," *Jour. Pol. Econ.*, Dec. 1960, 68, Tables 3 through 7.
19. ———, "Education and Economic Growth," *Social Forces Influencing American Education*, H. G. Richey, ed. Chicago 1961.
20. H. VON THÜNEN, *Der isolierte Staat*, 3rd ed., Vol. 2, Pt. 2, 1875, transl. by B. F. Hoselitz, reproduced by the Comp. Educ. Center, Univ. Chicago, pp. 140-52.
21. MORTON ZEMAN, *A Quantitative Analysis of White-Nonwhite Income Differentials in the United States*. Unpublished doctoral dissertation, Univ. Chicago, 1955.

COMPARATIVE ADVANTAGE AND DEVELOPMENT POLICY

By HOLLIS B. CHENERY*

In the great revival of interest in economic development that has marked the past decade, attention has centered on two main questions: first, what determines the over-all rate of economic advance?; second, what is the optimal allocation of given resources to promote growth? Analysis of the growth rate has relied mainly on the Keynesian tools and has produced a multiplicity of aggregate growth models. The second question, however, reopens more ancient economic issues, and their analysis must start from the classical and neoclassical solutions. Only very recently have the two types of discussion tended to come together in the more comprehensive framework of general equilibrium analysis.

In the field of resource allocation, controversy centers around the implications of the classical principle of comparative advantage, according to which growth is promoted by specialization. The defenders of this principle draw their inspiration from David Ricardo, J. S. Mill and Alfred Marshall, while the lines of attack stem from Friedrich List, J. A. Schumpeter, A. A. Young and J. H. Williams. The chief criticism is that comparative advantage is essentially a static concept which ignores a variety of dynamic elements.

This issue is of great practical importance to the governments of underdeveloped countries, most of which take an active part in allocating investment funds and other scarce resources. The main purpose of the discussion has therefore been to discover workable principles for the formulation of development policy. The classical approach derives these principles from international trade theory, while its critics base their analysis on modern growth theory. Elements of a dynamic, general-equilibrium theory are needed to resolve the differences between the two approaches. The more general analysis is of very limited value, however, unless its empirical implications can be ascertained.

The present paper discusses the analysis of resource allocation in

*I am indebted to Moses Abramovitz, Bela Balassa, and Lawrence Krause for helpful comments. Research for this article was undertaken at the Cowles Foundation for Research in Economics under Task NR 047-006, Office of Naval Research. [This is the third in a series of survey articles for which the Rockefeller Foundation has provided support.—*Editor*.]

less developed economies from three points of view. Section I tries to ascertain the extent to which the allocation principles derived from trade theory and from growth theory can be reconciled with each other without losing their operational significance. Section II compares various approaches to the measurement of optimal resource allocation in terms of their logical consistency and their applicability to different conditions. Section III examines some of the practical procedures followed in setting investment policy in underdeveloped countries in the light of the earlier discussion. Finally, some of the theoretical issues are re-examined to indicate their practical importance.

I. Conflicts Between Trade Theory and Growth Theory

The main contradictions between comparative advantage and other principles of resource allocation derive from their different orientation and assumptions. The classical analysis focuses on long-run tendencies and equilibrium conditions, while modern theories of growth are concerned with the interaction among producing and consuming units in a dynamic system. Since both approaches are familiar, I shall only try to identify the differences in assumptions and emphasis that lead to different policy conclusions.

A. The Implications of Comparative Advantage for Resource Allocation

The modern version of the comparative cost doctrine [20] is essentially a simplified form of static general equilibrium theory.¹ The optimum pattern of production and trade for a country is determined from a comparison of the opportunity cost of producing a given commodity with the price at which the commodity can be imported or exported. In equilibrium, no commodity is produced which could be imported at lower cost, and exports are expanded until marginal revenue equals marginal cost. Under the assumptions of full employment and perfect competition, the opportunity cost of a commodity, which is the value of the factors used to produce it in their best alternative employment, is equal to its market value. Market prices of factors and commodities can therefore be used to determine comparative advantage under competitive conditions. Long-term changes are not ignored, but they are assumed to be reflected in current market prices.

The Heckscher-Ohlin version of the comparative cost doctrine has been widely recommended as a basis for development policy because it provides a measure of comparative advantage that does not depend on the existence of perfect competition and initial equilibrium. This ver-

¹ An excellent discussion and synthesis of the several versions of trade theory is given by Caves [7]. The terms "comparative advantage" and "comparative cost" are used interchangeably in most discussions.

sion states that a country will benefit from trade by producing commodities that use more of its relatively abundant factors of production. It will export these commodities and import commodities using more of its relatively scarce factors unless its pattern of domestic demand happens to be biased toward commodities using domestic factors. The critical assumptions in this analysis are that factors of production are comparable among countries and that production functions are the same. These assumptions are not required by classical trade theory.

The applicability of the comparative cost doctrine to present-day conditions in underdeveloped countries has been re-examined by Viner and its validity has been reaffirmed with some modifications. Viner criticizes the Heckscher-Ohlin version because its assumption of comparable factors does not allow for observable differences in their quality [63, p. 16]. In his recent answer to critics of the comparative cost approach [64], however, Viner admits the necessity of interpreting comparative advantage in a dynamic setting in which the efficiency of production may change over time, external economies may exist, and the market prices of commodities and factors may differ from their opportunity cost. As Nurkse points out [64, p. 76], these modifications rob the original doctrine of much of its practical value. It is now necessary to have an explicit analysis of the growth process itself before it is possible to determine, even theoretically, where comparative advantage lies; market prices and current opportunity costs are no longer sufficient.

B. Implications of Growth Theory for Resource Allocation

Modern growth theory is concerned with the interactions over time among producers, consumers, and investors in interrelated sectors of the economy. In the writings of such economists as Rosenstein-Rodan [43], Lewis [29], Nurkse [36], Myrdal [34], Rostow [44], Dobb [12], and Hirschman [23], there is much more emphasis on the sequence of expansion of production and factor use by sector than on the conditions of general equilibrium. Growth theory either ignores comparative advantage and the possibilities of trade completely, or it considers mainly the dynamic aspects, such as the stimulus that an increase in exports provides to the development of related sectors or the function of imports as a carrier of new products and advanced technology. With this different point of view, growth theorists often suggest investment criteria that are quite contradictory to those derived from considerations of comparative advantage.

The conflicts between these two approaches to resource allocation may be traced either to differences in assumptions or to the inclusion of factors in one theory that are omitted from the other. Growth theory

contains at least four basic assumptions about underdeveloped economies that differ strongly from those underlying the comparative cost doctrine: (1) factor prices do not necessarily reflect opportunity costs with any accuracy; (2) the quantity and quality of factors of production may change substantially over time, in part as a result of the production process itself; (3) economies of scale relative to the size of existing markets are important in a number of sectors of production; (4) complementarity among commodities is dominant in both producer and consumer demand.

Some of the implications of these factors are developed by Rosenstein-Rodan [43] and Nurkse [36] as arguments for "balanced growth," by which is meant simultaneous expansion of a number of sectors of production.² Assuming an elastic supply of either capital or labor, these authors show that investment will be more profitable in related sectors, because of horizontal and vertical interdependence, than in the same sectors considered separately. Market forces will not necessarily lead to optimal investment decisions because present prices do not reflect the cost and demand conditions that will exist in the future. This effect of investment in one sector on the profitability of investment in another sector, via increased demand or reduced costs, has been called by Scitovsky [47] a "dynamic external economy." The imputation of these economies to the originating sectors may seriously affect the estimate of comparative advantage.

If we assume fixed investment resources instead of an elastic supply, the same set of factors provide an argument for concentrated or unbalanced growth [48] [50]. In order to achieve economies of scale in one sector, it may be necessary to devote a large fraction of the available investment funds to that sector and to supply increased requirements in other sectors from imports (or to curtail them temporarily). The optimal pattern of investment will then be one which concentrates first on one sector and then on another, with balance being approached only in the long run. Streeten [53] has developed further dynamic arguments for unbalanced growth from the fact that technological progress may be more rapid if increases in production are concentrated in a few sectors, while Hirschman [23] argues for imbalance to economize on entrepreneurial ability.

The historical significance of the balanced growth argument has been examined by Gerschenkron [18], Rostow [44], and Ohlin [38], in the context of nineteenth-century industrial development in Europe. They show that vertical interdependence has been important in stimulating the growth of related industrial sectors, although the nature and

² The term "balanced growth" has been given a variety of meanings, but the idea of simultaneous expansion on several fronts is common to all of them.

origin of these complexes differ from country to country. In one case they may be related to exports, in another to expansion for the domestic market. The importance of interdependence among producers emerges fairly clearly from these historical studies.

The net effect of the discussion of dynamic interdependence and balanced vs. unbalanced growth is to destroy the presumption that perfect competition, even if it could be achieved, would lead to the optimum allocation of resources over time. Since the doctrine of comparative advantage in its conventional form is a corollary of general equilibrium theory, the theoretical qualifications that apply to the latter also apply to the former. If, then, the doctrine of comparative advantage is to be useful for development policy, the essential elements of the growth analysis must be combined with it.

C. Dynamic Modifications of Comparative Advantage

Classical trade theory does not exclude changes in the supply of factors and other data over time, but it does insist that under perfect competition the effects of such changes will be reflected in the market mechanism. If, on the other hand, we take comparative advantage as a principle of planning rather than as a result of market forces, we can include any foreseeable exogenous changes in technology, tastes, or other data without going beyond the framework of comparative statics.

Some of the modifications suggested by growth theory are dynamic in a more essential way, in that a particular change depends not only on the passage of time but on other variables in the system. For example, the rate of increase in the productivity of labor in an industry may depend on an increasing level of production in that industry. Some of these dynamic elements can also be analyzed by methods of comparative statics if our purpose is only to choose among alternative courses of action.

The four assumptions of growth theory discussed above (Section B) lead to the following requirements for the analytical framework to be used in determining comparative advantage in a growing economy:⁸ (1) recognition of the possibility of structural disequilibrium in factor markets; (2) the inclusion of indirect (market and nonmarket) effects of expanding a given type of production; (3) simultaneous determination of levels of consumption, imports, and production in interrelated sectors over time when decreasing costs result from the expansion of output; and (4) allowance for variation in the demand for exports and other data over time.

⁸ Some of these criticisms of static analysis were made years ago by Williams [66], and a number of the elements were, of course, recognized by the classical economists themselves. I am not concerned with explicit criticism of the classical analysis, but with the possibility of reconciling it with growth theory.

These changes destroy the simplicity of the classical system, in which allocation decisions can be based on a partial analysis because adjustments in the rest of the economy are reflected in equilibrium market prices. In the dynamic analysis, it may not be possible to state that a country has a comparative advantage in producing steel without specifying also the levels of production of iron ore, coal and metal-working over time. In short, we are forced to compare alternative patterns of growth rather than separate sectors, and we cannot expect to find simple generalizations of the Heckscher-Ohlin type concerning the characteristics of individual lines of production.

Since there is no well-developed body of theory concerning the formal properties of the system just outlined,⁴ I shall only try to indicate in a general way the modifications that some of these elements of growth theory will produce in the analysis of comparative advantage.

Factor Costs. It is generally agreed that costs of labor and capital in underdeveloped countries do not reflect their opportunity costs with any accuracy because of market imperfections, but there is wide disagreement as to the extent of the typical discrepancies. Some types of labor may be overvalued while particular skills are undervalued. Factor costs may also change markedly over time as a result of economic development, so that an advantage based on cheap labor may prove quite limited in duration. As Lewis [29] and Hagen [21] show, the effects on comparative advantage of correcting for disequilibrium factor prices are often very substantial. (The effects of disequilibrium in factor markets are discussed further in Part II.)

Export Markets. Two of the main arguments against the trade pattern produced by market forces concern (1) the fluctuating nature and (2) the low income and price elasticities of the demand for primary products. The existence of cyclical fluctuation is well established, but the income and price elasticities vary considerably among primary commodities. Their net effect on the terms of trade of primary producers over time is a matter of dispute [64]. These characteristics are often used as an argument for reducing specialization in underdeveloped countries and for expanding industry for local consumption rather than expanding primary exports [41] [51].

These factors can be admitted without seriously modifying the principle of comparative advantage. The market value of the stream of export earnings should be reduced to reflect the drawbacks to the economy resulting from its variable characteristics, and this social value should be used in comparing investment in primary exports to other

⁴In his survey of modern trade theory, Caves [7] shows that attempts to introduce dynamic elements have been concerned mainly with particular aspects and have led not to new principles, but rather to extensions of static results.

alternatives. When export demand has a low elasticity, marginal revenue should be used in place of average revenue. Since it is quite likely that the market evaluation of the attractiveness of an investment in exports will differ from this social evaluation, some form of government intervention may be warranted. It is wrong, however, to conclude from this analysis that continued specialization in primary exports may not be the best policy, because even the corrected return on exports may be greater than that on alternative investments. The supply of foreign investment may also be greater for export production.

Productivity Change. The possibility of rising efficiency as labor and management acquire increasing experience in actual production has long been recognized [66] and forms the basis for the infant industry argument. This argument has been generalized to include the effects of increasing production in any industry on the supply of skilled labor and management available to other industries. Since manufacturing is thought to have more important training effects than primary production [33] [41], the fact that improvements in factor supply are not reflected in the market mechanism may introduce a bias against manufacturing. The empirical basis for this argument has been questioned by several economists [46] [63], who assert that there is often as much scope for technological improvement in agriculture as in industry. Without trying to settle the empirical question that has been raised, it may be concluded that productivity change is an important factor and therefore that comparative advantage should be measured over time. It cannot be said, however, that allowance for this factor will always favor manufacturing.

Dynamic External Economies. As indicated above, dynamic external economies are received by an industry from cost reductions or demand increases in other sectors. Cost reductions may result from economies of scale, productivity increases, or new technology. The customary analysis of comparative advantage on a sector-by-sector basis would require that the cost reduction from simultaneously developing inter-related sectors be allocated separately to each. However, if a group of investments will only be profitable when they are undertaken together, comparative advantage can only be determined for alternative combinations of investments. As shown in [11], not only do market prices fail to produce the best investment allocation in this situation, but any structure of equilibrium prices may also be an inadequate guide in the presence of economies of scale.

There is considerable evidence that external economies are more important in the industrial sectors than in primary production because of internal economies of scale, training effects, and high demand elasticities. Their omission from the market mechanism is therefore likely to

bias resource allocation against manufacturing. The quantitative significance of this factor is very hard to determine, however, since it involves simultaneous changes in a number of sectors.

Uncertainty and Flexibility. The limited ability of policy-makers to foresee changes in demand and supply conditions puts a premium on flexibility in the choice of a development strategy. This factor not only argues against specialization in one or two export commodities but it also favors the development of a diversified economic structure which will enable the economy to shift to new types of exports or import substitutes when changing trade conditions may require them. Kindleberger [26] sees this factor as the main explanation for his finding that the terms of trade have favored developed countries although they have not favored countries exporting manufactured goods in general.⁵ The argument is similar to that of Stigler [52] concerning the optimum choice of techniques in a manufacturing plant. The optimum design for a changing market is likely to differ from the optimum under static conditions because in the former case the proper criterion is lowest-cost production for varying operating levels and with changes in product design. Similarly optimum development policy should result in a pattern of resource allocation that allows for unforeseen changes in supply and demand conditions even at the cost of some loss of short-term efficiency.

II. *The Measurement of Optimum Resource Allocation*

The development of an adequate theory is only the first step in formulating economic policy. In order to reach practical conclusions, it is also necessary to specify the environment in which the policy-maker functions. Relevant aspects of a particular society include its general objectives, the policy instruments to be considered, and the information available. The theory must then be combined with these elements in such a way as to yield guides to action or "decision rules" for particular situations.

Although the growing science of operations research is concerned with the development of decision rules for business and military operations, less progress has been made in developing an operational approach to long-run economic policy. Tinbergen [55] and Frisch [15] have outlined a general framework for policy analysis, but it has had relatively little impact on the discussion of the development of underdeveloped countries. In this field the failure to specify adequately the decision-making environment and to distinguish between decision rules and the corollaries of pure theory has led to great confusion.

Since the information needed for over-all economic analysis is avail-

⁵ This argument is also discussed by Caves [7, pp. 264-66].

able to a very limited extent in underdeveloped countries, there has been a considerable effort to derive decision rules or "investment criteria" that can be based on partial analysis. I shall group the various suggestions into three categories: (1) factor-intensity criteria; (2) productivity criteria; (3) programming criteria based on accounting prices. Although these various approaches often lead to contradictory results, each has some merit as a form of decision rule if properly qualified. In general, the theoretically more valid formulations require more information and must be replaced by cruder approximations when adequate data are not available. Since a major part of the literature in the development field has been devoted to the discussion of investment criteria, it is important to identify the sources of conflict among them and to specify the circumstances under which each may be approximately correct.

In economic theory, capital and labor are assumed to be separately allocated in single units to different uses. In national planning, however, it is more convenient to consider the decision to install a given productive process or plant, representing the allocation of a group of inputs in specified quantities, as the basic choice. Investment criteria are customarily formulated for "projects" of this sort, since they form the basis for the decisions of planning authorities. This procedure recognizes that very small productive units are uneconomical, and it permits a consideration of different scales of output. The choice of techniques can be considered as a choice among projects producing the same output from different input combinations. In this way the allocation procedure can be divided into two steps: the choice of the best technique for a given type of product, and the decision whether to produce the commodity at all. The principle of comparative advantage is more directly relevant to the second type of choice, but the two cannot be separated entirely.

A. Factor-Intensity Criteria

The simplest approach to any allocation problem is to concentrate on the scarcest resource. Since this is often capital in underdeveloped countries, it seems reasonable to choose the technique that uses the least capital to produce a given output. The same logic is applied to the choice of sectors of production: an underdeveloped country is advised to produce and export commodities that use relatively less capital per unit of output and to import items requiring more capital. Statements of this type occur in many economic writings of the past fifteen years. Buchanan [5] was among the first to state this criterion for investment in underdeveloped countries and to base policy recommendations upon it.

The "minimum capital-output ratio" criterion is only valid under the following restrictive conditions:⁶ (1) Either capital is the only scarce factor in the system, or other inputs are so abundant relative to capital that the latter is the dominant element in determining cost differences. (2) Either the same output is produced by each investment alternative, or the market values used to compare the different products coincide with their social values. (3) Production takes place under constant costs.

The use of the capital-output ratio theoretically requires a measurement of the total capital used in producing a given commodity, including the capital used in producing all materials and services purchased. Alternatively, the indirect use of capital can be allowed for by deducting the cost of purchased inputs from the value of output and expressing the criterion as the ratio of capital to value added. This procedure requires the further assumption that market prices correctly reflect the use of capital in the rest of the economy.

A closely related allocation criterion is the capital intensity: the ratio of capital to labor. This test is derived directly from the Heckscher-Ohlin version of the comparative cost doctrine. If the same production functions exist in all countries and if capital is scarce relative to labor in the underdeveloped countries, comparative advantage in the latter can be identified by low capital-labor ratios. This approach does not assume that labor has zero opportunity cost, as does use of the capital-output ratio, but only that the ratio of labor cost to capital cost is lower than in the country's trading partners. To allow for differences in the quality of labor among countries, it is sometimes suggested that the assessment of relative labor cost should be made for labor units of equal efficiency—e.g., the labor required in each country to perform a given type of operation with the same capital goods and organization.

A principal criticism of the use of both these ratios is that they ignore the existence of other factors of production, such as natural resources. If either labor or natural resources has a significant opportunity cost, the capital-output measure must be replaced by the more general marginal productivity of capital criterion, which is discussed in the next section.

To judge comparative advantage by the capital-labor ratio is to assume either that this ratio will be the same for the same industry in all countries, or that capital is equally substitutable for labor in producing all the commodities traded. Deviations from these assumptions, along with the omission of other inputs and variations in efficiency by

⁶A rigorous analysis of the validity of marginal and average factor-output ratios as indicators of optimum allocation in a two-factor system is given by Bator [4].

sector, make the capital-labor criterion a very crude approximation indeed to a proper estimate of comparative advantage.

B. *Marginal Productivity Criteria*⁷

A more comprehensive allocation criterion is the social marginal product of a given unit of resources in a given use. Where the factor-intensity criteria are at best only correlated with the increase in national income produced by a project, the productivity criteria try to measure the increase. The marginal productivity test is in turn less general than the over-all programming approach, because it is based on a partial equilibrium analysis that is only valid for relatively small changes in the economic structure.

The several forms of marginal productivity criterion that have been proposed differ in the assumptions made about the social welfare function and in the extent to which allowance is made for the indirect effects of a given allocation. All versions are alike in assuming that the government controls, directly or indirectly, a certain fraction of the investible resources of the country and wishes to allocate them in such a way as to maximize future welfare.

Since the productivity criteria are usually applied to investment projects rather than to single units of capital, they are "marginal" only in the sense that a project normally constitutes a small fraction of the total capital invested in a given year. For very large projects a breakdown into smaller units would be more appropriate.

The Static SMP Criterion. As proposed by Kahn [25], the social marginal product (SMP) is a general equilibrium concept which is conventionally defined as the net contribution of a marginal unit (project) to the national product.⁸ The related decision rule is to rank investment projects by their SMP and to go down the list until the funds to be allocated are exhausted. Alternatively, any project having an SMP above a given level can be approved.

Kahn uses the SMP criterion to show the fallacies in the factor-intensity measures that had been advocated by Buchanan [5], Polak [40], and other writers. He points out that: "The existence of a particular natural resource, specialized skills, particular climatic conditions, or the importance of a particular product or service may make the SMP of capital higher in a line which is more capital intensive than in another which is less so" [25, p. 40]. He also argues that even when there is substantial rural unemployment, a considerable amount

⁷ Surveys of these and other investment criteria are given by Castellino [6], Vaidyanathan [62], and the United Nations [61].

⁸ To be more accurate, cost and output streams should be discounted to the present, but I shall not be concerned with differences in the time pattern of output of different projects.

of capital and other inputs are required to transport, train, and house the workers who are to be employed elsewhere. Kahn's arguments against the simple capital-intensity criteria appear to have been generally accepted, although he admits that a lower capital-output ratio may be a useful guide when other information is lacking.

Some modifications in the SMP criterion were suggested by the present author [8] to allow for artificial elements in the price system (tariffs, subsidies, etc.) and to provide for the evaluation of labor and foreign exchange at opportunity cost rather than at market value. Further allowances for the difference between market price and social value can be made by estimating the benefits to be provided to other sectors in the form of external economies, and by including overhead costs in the estimate of the cost of labor. All of these elements are included in Eckstein's synthesis and extension of the productivity approach [14].⁹

The SMP criterion is entirely consistent with the general programming approach discussed below, which derives opportunity costs from an explicit analysis of total factor use. In the absence of such an overall analysis, the corrections suggested for the calculation of the productivity of investment are likely to be quite approximate. There is no logical conflict between the results of the SMP analysis and the dictates of comparative advantage because each is a corollary of a general equilibrium solution over a given time period.

The Marginal Reinvestment Criterion. A sharp criticism of the SMP criterion was made by Galenson and Leibenstein [17], who challenge some of its basic premises. They would substitute a different social welfare function in which the aim is to maximize per capita income at some time in the distant future rather than to maximize a discounted stream of income over time. They also assume severe restrictions on the policy instruments available to the government, and in particular deny its ability to affect the rate of saving by fiscal measures. Under these assumptions, it is necessary to take account of the division of income resulting from a project between profits and wages, since savings from the former are higher.

To maximize the total output at some distant future time, Galenson and Leibenstein easily show that the most "productive" project is not necessarily the one which maximizes national income in the near future but the one which leads to the highest savings. Since it is assumed that neither voluntary saving nor taxes can be extracted from wages, the most productive project will be the one with the highest profit rate per

⁹ Eckstein points out that the assumption of capital rationing implies a social judgment as to both the amount of investment in the current period and the discount to be applied to future outputs, since the market rate of interest is rejected for both purposes.

unit of capital invested.¹⁰ The assumption that profits are saved and reinvested leads to the "marginal reinvestment quotient" as a decision-rule to be applied in place of the SMP.

Galenson and Leibenstein push their argument one step further and identify the most profitable project as the one with the highest capital-labor ratio. This result leads them to the paradoxical conclusion that the factor-intensity rule should be reversed: countries should prefer the most capital-intensive rather than the least capital-intensive techniques in order to promote savings and future growth. This conclusion involves an implicit assumption about the nature of production functions: that increasing the capital intensity will necessarily raise the average return to capital in each sector of production. This is obviously not true in general and is not necessarily true of existing productive techniques. The savings effect of a given project should therefore be measured directly and not assumed to vary in proportion to the capital-labor ratio.

Galenson and Leibenstein have been widely criticized for their extreme assumptions [4] [14] [24] [35], in particular for the use of a social welfare function in which the starvation of half the population in the near future would appear to be a matter of indifference and for the assumption that limitations on fiscal policy make a lower income preferable to a much higher one if the former has a higher savings component. Their analysis has nevertheless been useful in emphasizing that other effects of an investment beside its immediate contribution to the national product should be included in the productivity criterion.¹¹

The Marginal Growth Contribution. Eckstein [14] has successfully reconciled the conflict between the Kahn-Chenery SMP approach and the Galenson-Leibenstein reinvestment approach, and in so doing he has provided a considerable generalization of each. First, he assumes that the social objective is to maximize the present value of the future consumption stream. With a zero discount rate, this objective approximates the long-term income objective of Galenson and Leibenstein, while with a high discount of future consumption it leads to the maximization of income in the short term. Second, Eckstein assumes that there is a different savings (reinvestment) coefficient associated with each project, but he allows for any savings rate out of wages and profits. From these assumptions, he derives a measure of the "marginal growth contribution" of a given project that consists of two parts: (1)

¹⁰ I omit the possibility of an effect on population growth, which leads Galenson and Leibenstein to state the criterion on a per capita basis.

¹¹ In [28], Leibenstein restates in more restrained form his arguments for including labor training, savings, population growth, and other indirect effects in a comprehensive productivity measure.

an *efficiency term*, consisting of the present value of the consumption stream; and (2) a *growth term*, consisting of the additional consumption to be achieved by reinvesting savings.

The relative importance of the two terms depends largely on the rate of discount that is applied to future consumption. Even with a low rate of discount, the significance of the second term depends on how much variation there is in the fraction of income saved among different projects. If the savings ratio is not related to the form of income generated, then, as Bator [4] shows, there is no conflict between maximizing income in the short run and in the longer run. Eckstein's formula provides for all possible intermediate assumptions between the two extreme views of the determinants of savings.¹²

In principle, one might include other indirect dynamic effects, such as the value of the labor training provided, in the measurement of the total productivity of a given project. There is a danger of double counting if partial-equilibrium analysis is extended too far, however, and most indirect effects can be more readily evaluated in the more general programming framework considered below.

C. Programming Criteria and Accounting Prices

The allocation rules discussed up to now are based on the existing economic structure and are strictly applicable only for relatively small changes in it. Although it may in many instances be necessary to rely primarily on these marginal criteria for lack of data on the rest of the economy, it is important to have some way of testing larger changes and of evaluating the errors that are introduced by the marginal procedure. Furthermore, without a more comprehensive analysis it is impossible to reconcile fully the conflicting policy implications of comparative advantage and growth theory.

The difficulties of partial analysis increase with the number of modifications that have to be applied to market prices in order to arrive at social value. Both the factor-intensity ratios and the partial productivity measures assume that there is one principal restriction on the system, the scarcity of capital. They do not allow for the fact that in allocating capital according to any one of these rules some other restriction on the system, such as the supply of foreign exchange, of skilled labor, or of a particular commodity, may be exceeded.

The programming approach to resource allocation begins with the problem of balancing supply and demand for different commodities and factors of production. Until quite recently, practical programming

¹² Sen [49] independently formulated a more general investment criterion that is very similar to Eckstein's, in which the SMP and reinvestment criteria are shown to be limiting cases.

methods have been more concerned with ensuring the consistency of a given allocation of resources with certain targets than with testing the efficiency with which resources are used. Historically speaking, the programming approach is thus the operational counterpart of the theory of balanced growth, from which much of its conceptual framework is derived.

One of the earliest attempts at formulating a comprehensive development program for an underdeveloped area was Mandelbaum's illustrative model for Southeastern Europe, undertaken during the war [31]. He starts, as many subsequent programs have done, from an estimate of the increase in national income required to absorb a prospective increment in the labor force. The allocation of capital and labor is made initially from demand estimates and by analogy to the structure of more advanced countries. The principle of comparative advantage is only introduced intuitively in modifying the initial projection. The main test of resource allocation is the balance of demand and supply for each sector and factor of production.

The development of mathematical programming methods makes it possible to carry out this type of analysis in a much more precise way. In several countries, consistent development programs have been formulated by using input-output analysis, as in the studies of the Economic Commission for Latin America [58] [59] [60]. It is only with the development of linear programming, however, that it is possible to reconcile the consistency criteria and the productivity criteria in a systematic way.

A link between the test of consistency (feasibility) in resource allocation and the test of productivity (efficiency) is provided by a consideration of the price implications of a given allocation. Assume that a set of production levels has been worked out so as to be consistent with the available supplies of labor, capital and natural resources, given the structure of consumer demand and the country's trading possibilities. These sector production and trade levels constitute a "feasible program." Any such program implies a unique set of commodity and factor prices if the economy is in equilibrium. If production activities are assumed to operate at constant costs, linear programming provides a method of calculating the "shadow prices" corresponding to the equilibrium conditions, in which the price of each commodity is equal to its cost of production.¹³ Prices are determined by the solution to the following set of simultaneous equations, one for each production activity included in the program:

$$(1) \quad a_{1j}P_1 + a_{2j}P_2 + \cdots + a_{nj}P_n = 0 \quad (j = 1 \cdots n)$$

• ¹³ The assumptions of linear programming and methods of finding solutions to programming models have been discussed in a number of recent publications, such as [13].

•

•

where a_{ij} is the input or output of commodity or factor i by activity j , and P_i is the shadow price of commodity or factor i . The input coefficients may be measured at existing prices or in other convenient units. In an open economy, activities of importing and exporting are also included in the system, and the price solution contains the equilibrium price of foreign exchange. An example of this calculation is given in Table 1, which will be explained shortly.

The use of shadow or "accounting" prices in evaluating investment projects has been suggested by Tinbergen [54] [56], Frisch [15] [16], and Chenery [9] [10]. Although Tinbergen does not use a linear programming framework, his accounting prices for factors have the same meaning as shadow prices: the opportunity cost implied by a given resource allocation.¹⁴ He suggests computing the costs associated with a project by using accounting prices; any project that shows a positive net return over cost (including capital cost) should be approved. This test is equivalent to the SMP criterion, as shown below.

The general linear programming problem is to maximize the value of a linear objective function subject to linear constraints. In development programs, the principal constraints are that the demands for commodities and factors should not exceed their supplies; the function to be maximized is usually taken as the national income. Alternatively, the objective may be the achievement of a given increase in output at minimum cost in investment (including foreign investment). Other social objectives, such as a minimum employment level or a specified degree of regional balance, can be included as additional restrictions on the program. The instrument variables can also be constrained to fall within specified limits, as in the models of Frisch.¹⁵

To illustrate the meaning and use of shadow prices in evaluating investment projects, I shall take up a very simplified programming model that is worked out in more detail elsewhere [11]. The truncated system given in Table 1 covers only a small part of the economy, but it will serve to illustrate the way in which interdependence influences in-

¹⁴ Tinbergen [56, p. 39] defines accounting prices as those "that would prevail if (i) the investment pattern under discussion were actually carried out, and (ii) equilibrium existed on the markets just mentioned" [i.e., labor, capital, foreign exchange markets]. The relation between accounting and shadow prices is discussed in Chenery [10] and Qayum [42].

¹⁵ Frisch is one of the strongest advocates of the use of linear programming for development planning, as indicated in the preface to a recent methodological study: "In the beginning of 1959, during my work as a United Nations expert in Cairo, I was confronted with the problem of working out a methodology for *optimal investment programming* in a rapidly expanding underdeveloped country. I have always believed—and my Cairo experiences have confirmed it—that such a method must be formulated in terms which ultimately make the problem amenable to linear programming. Otherwise one is practically certain to be taken by surprise afterwards in unexpected balance of payments difficulties and other troubles" [16, p. 1].

TABLE 1—EVALUATION OF PRODUCTION AND IMPORT ACTIVITIES BY ACCOUNTING PRICES^a

Commodities and Factors	Production Activities				Import Activities			Accounting Prices				Restrictions (12)
	X ₁ (1)	X ₂ (2)	X ₃ (3)	X ₄ (4)	M ₁ (5)	M ₂ (6)	M ₃ (7)	Trial a (8)	Trial b (9)	Trial c (10)	Trial d (11)	
1. Metal Products	1.00 (3.41)				1.00 (3.41)			2.55	3.42	3.41	2.26	1000
2. Iron and Steel	-.22 (-.89)	1.00 (4.03)				1.00 (4.03)		3.60	4.82	4.03	3.50	1000
3. Iron Ore		-.08 (-.25)	1.00 (3.12)				1.00 (3.12)	3.30	4.42	3.12	2.19	0
4. Foreign Exchange				1.00 (4.01)	-.85 (-3.41)	-1.20 (-4.81)	-1.10 (-4.41)	3.00	4.02	4.01	2.92	0
5. Other Inputs	-.20 (-.62)	-.25 (-.78)	-.70 (-2.17)	-.10 (-.31)				3.00	3.20	3.10	2.20	—
6. Labor	-.70 (-1.05)	-.20 (-.30)	-.30 (-.45)	-1.00 (-1.50)				1.50	1.50	1.50	.50	—
7. Capital	-.70 (-.70)	-2.70 (-2.70)	-.50 (-.50)	-2.20 (-2.20)				1.00	1.00	1.00	1.00	—
Social Profitability ^b												
Trial a	-.59	-.41	+.25	-1.00	0	0	0					
Trial b	-.03	+.37	+1.23	0	0	0	0					
Trial c	+.15	0	0	0	0	-.78	-1.29					
Trial d	0	-.03	0	0	-.22	0	-1.02					
Production and Import Levels												
Trial a	0	0	0	2050	1000	1000	0					
Trial b	0	1000	80	850	1000	0	0					
Trial c	1000	1220	98	0	0	0	0					
Trial d	1000	0	0	1464	0	1220	0					

^a Based on Chenery [11], Table 1. Prices satisfy equation (1) except for P_4 in trial 1. Figures in parentheses are (a_i , P_i) for trial c.^b Calculated from equation (4).

vestment decisions and the effect of having more than one scarce factor.

The model contains four production activities (X_1, X_2, X_3, X_4) and three import activities (M_1, M_2, M_3). Each activity is represented in Table 1 by a column of coefficients, a_{ij} , showing the amount of input (-) or output (+) of commodity i when the activity is operated at unit level. (These coefficients are the boldface figures in columns 1 to 7.) The net output is taken as unity in all cases. The production activity X_1 , for example, represents the production of one unit of metal products from .22 units of iron and steel, .20 units of "other inputs," .70 units of labor, and .70 units of capital. The import activity M_1 provides an alternative way of supplying a unit of metal products by an expenditure (input) of .85 units of foreign exchange. A similar choice is provided between X_2 and M_2 (iron and steel) and between X_3 and M_3 (iron ore). The fourth production activity shows the resources used in the marginal export sector to provide a unit of foreign exchange.

In a complete programming model, the amounts of all commodities required for final use at a given level of income would be entered as restrictions on the solution. Similarly, the amounts of available capital and labor of different types would be specified. In this limited illustration, the problem is to supply requirements of 1000 each for metal products and iron and steel at minimum cost. Iron ore and foreign exchange are therefore taken to be intermediate goods having no net outside demand. "Other inputs," labor and capital are supplied from outside the model at prices reflecting their opportunity costs in the rest of the economy. The main difference in principle between this submodel and a complete programming system is that the prices of only the first four commodities are determined in the model in the present case, while in general all prices are so determined.

The four restrictions in the model consist of equations stating that the supply of each of the first four inputs must be equal to the specified demand:¹⁶

$$\begin{aligned}
 &X_1 + M_1 = 1000 \\
 &-.22X_1 + X_2 + M_2 = 1000 \\
 (2) \quad &-.08X_2 + X_3 + M_3 = 0 \\
 &X_4 - .85M_1 - 1.20M_2 - 1.10M_3 = 0
 \end{aligned}$$

The objective is to minimize the amount of capital required to supply the given final demands, with the use of labor and "other inputs" valued at their opportunity costs in terms of capital. This is the same

¹⁶ I omit the possibility of overfulfilling demands, since there are no joint products in the present case.

as supplying each commodity at minimum unit cost, since the amount of each to be supplied is fixed.

A feasible solution to the model contains either a production or an import activity for each of the three commodities plus the export activity for foreign exchange. The corresponding activity levels can be determined from equations (2) and are shown at the bottom of Table 1. The amounts of the outside factors (F_i)—labor, capital, and “other inputs”—required by each solution can then be determined from the following equations:

$$\begin{aligned} \text{Other inputs: } F_5 &= .20X_1 + .25X_2 + .70X_3 + .10X_4 \\ (3) \quad \text{Labor: } F_6 &= .70X_1 + .20X_2 + .30X_3 + 1.00X_4 \\ \text{Capital: } F_7 &= .70X_1 + 2.70X_2 + .50X_3 + 2.20X_4 \end{aligned}$$

The programming model thus contains two types of equations: price equations of the type of (1), and equations for the supply and demand of commodities and outside factors, (2) and (3). As outlined in [10], the general procedure for solving a programming model of this type involves three steps: (a) finding a feasible program or set of activity levels that satisfies the supply-demand restrictions; (b) calculating the shadow prices associated with the given program; (c) using these prices to determine whether any improvement in the initial program is possible. This procedure is repeated as long as any further improvements can be made.

The programming criterion used to compare projects or activities is the social profitability of each as measured from the shadow prices. Any profitable activity should be included in the program. It is the recalculation of prices that distinguishes this procedure from the partial programming approach suggested by Tinbergen. In either case, however, the test of social profitability of activity j can be expressed as:

$$(4) \quad \Pi_j = \sum_i a_{ij}P_i$$

By definition, the activities that were used in determining the shadow prices will have a profitability of zero. The optimum solution is identified by the condition that all other activities have zero or negative profitability.

Some idea of the type of adjustment that results from moving from partial toward general equilibrium analysis may be given by determining solutions to the model in Table 1 under four different procedures: (a) the use of market prices; (b) correcting for the overvaluation of foreign exchange; (c) finding the optimum solution for the submodel alone; (d) finding the optimum solution for the submodel with changes in the opportunity costs of labor and other inputs determined from a

general programming model. The accounting prices corresponding to each assumption are shown in columns 8 to 11 of Table 1. The calculation of social profitability of each activity, given the accounting prices, is illustrated in the table for trial c by giving cost and revenue figures in parentheses in columns 1 to 7.

Trial a. Assume that market prices are based on the cost of importing and are determined by setting profits on the import activities equal to zero, with a given foreign exchange cost of 3.00. The exchange rate is assumed to be overvalued, so that the price of foreign exchange is less than the cost of securing it through expanded exports. At these market prices, only activity X_3 (iron ore) is profitable, but there is no domestic demand for iron ore unless steel is also produced (the export price is lower than that of imports because of transport costs). The use of market prices therefore leads to imports of steel and metal products, since the opportunity cost of expanding exports is not taken into account. The corresponding activity levels are shown at the bottom of the table.

Trial b. Assume now that we correct for the existing structural disequilibrium by setting the price of foreign exchange equal to its opportunity cost of 4.02 as determined from the export activity X_4 . Allowance is also made for a rise in the accounting price of "other inputs," some of which are imported. A new set of accounting prices for commodities 1-3 is determined from the cost of imports. Substituting these prices into equation (4) shows that X_2 and X_3 are both profitable ($\pi_2 = .37$, $\pi_3 = 1.23$). Investment should therefore take place in steel, iron ore, and exports on this test.

Trial c. To find the optimum solution to the submodel by linear programming, we can start from trial b and recalculate the shadow prices from the activities that are included: X_2 , X_3 , X_4 , M_1 . The four shadow prices P_1 to P_4 are determined by applying equation (1), taking the prices of the outside inputs (P_5 , P_6 , P_7) as given. The elimination of excess profits from the prices of iron ore and steel lowers the cost of producing metal products, providing an example of pecuniary external economies. Instead of a loss, activity X_1 now shows a profit of .15 and should be substituted for the import activity M_1 . With the original prices for labor and capital, the optimum solution to the submodel is therefore to produce all three commodities and import nothing, since all import activities are unprofitable.

Trial d. If a similar analysis is carried out for the economy as a whole, it is likely that the initial estimate of the opportunity cost of labor (equal to its market price) will be revised. Assume that the shadow price of labor (equal to its marginal product in the rest of the

economy) is only a third of its market price, or .5 units of capital. This lower labor cost will reduce the costs of production in different activities in proportion to their use of labor. Since exports are cheapened more than steel production by this calculation, it now becomes socially profitable to import steel and produce metal products. The optimality of this solution is shown by the prices in trial d, in which there is a loss of $-.03$ on X_3 . The optimum quantity solution is shown at the bottom of the table. Valuing other inputs and labor at their accounting prices, it has a capital cost of 5760, compared to 8200, 7470, and 7290 in trials a, b, and c.

The programming approach of trials c and d adds two elements to the analysis of accounting prices. The first is the inclusion of repercussions on input prices from investment in supplying sectors. This is one of the main types of dynamic external economies which are omitted from partial analysis. It is much more significant when there are economies of scale. The second element is the revision of the initial estimate of the opportunity costs of labor, capital, and foreign exchange. This revision is determined by the relation between supply and demand for these factors and thus takes into account the requirements of feasibility.¹⁷

The profitability criterion (usually called the "simplex" criterion) that is used in linear programming is logically equivalent to the SMP test if the same prices are used in both. The two can be put in a comparable form as follows:

$$(4a) \text{ Social profit on activity } j: \quad \Pi_j = \sum_i a_{ij}P_i - k_j$$

$$(5) \text{ SMP of investment in activity } j: (\text{SMP})_j = \frac{\sum_i a_{ij}P_i}{k_j} = \frac{\Pi_j}{k_j} + 1$$

where $-k_j$ is used for the capital input coefficient instead of a_{7j} . An activity having a positive social profit in equation (4a) will have an SMP of greater than 1.0 in (5), and the same projects would be accepted by either test. If the prices used are not the equilibrium prices, however, the project rankings by the two formulae will not necessarily be the same.

Although the example given here contained only one technique of production for each commodity, linear programming methods readily encompass alternative techniques. In a trial application of linear programming to Indian planning, Sandee [45] includes three alternative

¹⁷ An example in which these successive adjustments are calculated in detail is given in [10]. Frisch has outlined a computational procedure for handling large numbers of investment projects without going beyond the capacity of simple calculating equipment [16].

ways of increasing agricultural output—increased use of fertilizer, irrigation, and extension services—which are substitutes over a limited range. The four alternative techniques for producing textiles cited by Galenson and Leibenstein [17] could also be more properly evaluated in a programming model in which the cost variation associated with their different requirements for materials, maintenance, and skilled labor could be included. However, it is only necessary to include alternative techniques in a programming model when the choice between them depends on the outcome of the solution. Probably in most cases the range of shadow prices can be foreseen accurately enough to determine in advance which technique is more efficient for a given country. The initial assumption can always be verified after the analysis has been completed by using the resulting prices.

Linear programming can be extended to include many of the indirect effects of investment that are suggested by growth theory. The production of trained labor, the effect on savings, or other indirect benefits can be considered as joint outputs whose value can be specified in the objective function. Similarly, indirect costs of production, such as the provision of housing to urban workers, can be included as additional inputs. The shadow prices computed from such an expanded system will therefore reflect nonmarket as well as market interdependence to the extent that it can be specified in quantitative form.

In formal terms, it is also quite easy to extend the programming model in time and to compute future prices for commodities and factors. The measurement of social profitability could then be made against a pattern of changing future prices. Given the degree of uncertainty attached to all future economic magnitudes, however, this is not likely to be a very useful procedure beyond the customary five-year planning period except in the most general terms. It would, however, be desirable to estimate the change in the equilibrium prices of foreign exchange and labor over a longer period of time, since these are the most important variables in choosing among investment projects.

D. Investment Criteria and Comparative Advantage

The linear programming approach provides a convenient link to the principle of comparative advantage because the optimal pattern of trade is determined simultaneously with the optimum allocation of investment. The model is considerably more general than that of market equilibrium because it allows for different social objectives and takes account of costs and benefits other than those entering the market. The limitations to the programming model are of two sorts: the form of the restrictions that are specified, and the omission of relationships that cannot be expressed in quantitative form.

The introduction of inelastic demands or increasing costs does not create any more theoretical difficulty in a programming model than in the corresponding general equilibrium system, although the computational aspects of such models have not been widely explored. The accounting prices perform the same function as guides to proper allocation, but the test of social profitability must be applied in marginal rather than average terms. In development programs, this modification is particularly important in the case of exports, where the price elasticity of demand is often rather low.¹⁸ As Nurkse [37] points out, marginal comparative advantage for the underdeveloped countries may for this reason be quite different from that inferred from the average costs and prices of primary exports.

The existence of increasing returns creates the same problem for the programming model as it does for equilibrium theory. Marginal-cost pricing is not sufficient to determine whether an investment should be undertaken, and the total cost of alternative solutions must also be considered. Although practical methods of solving programming models containing decreasing costs are now being developed, they do not give allocation criteria that rely only on accounting prices. It is approximately correct to say that beyond a certain output level country A has a comparative advantage in the production of steel, but the precise determination of the break-even point depends on the level of output in other sectors also.¹⁹

The most serious theoretical qualification to the principle of comparative advantage comes from the type of nonquantitative interdependence among sectors that is assumed by Hirschman [23]. If, as he supposes, one growth sequence is more effective than another because it economizes on decision-making ability or provides a greater incentive to political action, a set of criteria having little or nothing to do with comparative advantage is implied. The empirical significance of these psychological and sociological factors remains to be established, but they lead to a conflict that cannot be resolved in economic terms.

When the practical limitations on information and analysis are recognized, the possibilities of conflict between comparative advantage and growth theory are greatly increased, and Wiles [65] suggests that marginal efficiency calculations may be less important. An aversion to risk-taking may be a valid reason for limiting the extent of specialization in the export of primary products beyond the amount that would be optimum in the light of more accurate information. An inability to

¹⁸ A programming model including this feature is given in Chenery [9].

¹⁹ The nature of solutions to this type of problem is considered in [11], from which the data in Table 1 were taken. In this situation of decreasing average cost, the programming model may provide a greater improvement over the solution using partial criteria.

measure the extent of economies of scale, labor training, and other sources of external economies also makes possible a continuing disagreement as to their magnitude.

III. *Comparative Advantage and Balance in Development Programs*

The inconsistent procedures that governments employ in formulating development policies are probably the most important source of conflict between the dictates of comparative advantage and of growth theory. Official pronouncements on development policy usually allege that both types of criteria have been (or should be) utilized in drawing up the program that is put forward, but the procedure followed in reconciling conflicts between the two is rarely made explicit. Since the analytical basis of most development programs is quite limited, it is important to look into the procedure that is actually used in order to discover sources of bias.

Development programs must simultaneously confront two sets of problems. In the short run, progress is hampered by structural disequilibrium in factor markets and in the demand and supply of particular commodities. This disequilibrium is reflected in the balance-of-payments difficulties that beset most low-income countries as they try to accelerate the process of development. In the longer run, the choice among sectors becomes increasingly important because the pattern of growth in each period will depend on the choices made previously. Development programs that are influenced mainly by the existing structural disequilibrium therefore tend to stress the need for greater balance between domestic demand and supply, while those that take a longer view tend to pay more attention to comparative advantage.

Although the procedures actually followed cannot be ascertained with any accuracy by an outside observer, these two aspects can be identified from characteristic elements in the analysis. The balanced growth approach is generally associated with target-setting in key sectors, stress on the avoidance of bottlenecks, and attempts to equate the supply and demand of labor, capital, and the more important commodities. The extreme cases of this type of procedure are found in the communist countries. Less extreme examples, in which some attention is paid to comparative advantage, are the procedures of the Indian Planning Commission and the U.N. Economic Commission for Latin America.

Characteristic elements of the comparative advantage approach are attempts to measure the relative efficiency of different types of production, the weighing of balance-of-payments improvements against other benefits to the economy (by means of accounting prices or otherwise), and usually a greater emphasis on partial analysis than on over-all

projections. Examples that will be cited are Puerto Rico, the Philippines, and Israel.

A. Procedures Emphasizing Domestic Balance

The planning procedures developed in the USSR and applied with some modification in other communist countries represent in extreme form the use of balance as a criterion for resource allocation and the virtually complete omission of any test of comparative advantage. As revealed in recent studies by Montias [32] and Balassa [1], the main tool of Soviet-type planning is a very detailed system of material balances specified in quantitative terms. Policy objectives are translated into production targets in which priority is given to heavy industry and other sectors that are expected to contribute to further growth ("leading links"). Prices are used mainly as rationing devices and have no necessary connection with production costs. The cumbersome calculations involved in arriving at balance of supply and demand for a large number of commodities limit the alternatives that can be tried out, so the main effort is to find a feasible program [32].

The question of comparative advantage scarcely arises in the USSR because of its size and diversified resources, although similar problems arise in connection with the choice of production techniques. When the Soviet planning system was transplanted to the satellite countries, however, it ran into difficulties because of its inability to determine the advantages to be secured from trade. According to Balassa [1, p. 264], the idea of comparative advantage did not exist in Hungarian development policy (at least until very recently) although trade has a high ratio to GNP. Exports are determined by import "needs," and the institutional structure is such as to encourage exporters to meet targets for exports without regard to production costs. Since prices do not reflect resource use, it is impossible to determine where comparative advantage lies and to what extent the trade pattern deviates from the optimum.

Despite their violation of most short-term welfare considerations, the success of Soviet planning methods in producing a rapid rise in the national product makes them attractive to many underdeveloped countries. In India, for example, Mahalanobis' "plan-frame" for the second five-year plan [30] draws heavily on Soviet methodology. He starts from the assumption that the rate of investment is determined by the level of domestic production of capital goods: "As the capacity to manufacture both heavy and light machinery and other capital goods increases, the capacity to invest (by using home-produced capital goods) would also increase steadily, and India would become more and more independent of the import of foreign machinery and capital

goods" [30, p. 18]. His analysis implies that export possibilities are so limited that they can be ignored, so that the composition of demand is limited by the composition of domestic output. In order to raise the level of investment, Mahalanobis concludes that investment in industries producing capital goods should be increased from less than 10 per cent to 30-35 per cent of total investment in the second five-year plan.

As Komiya [27] has shown, Mahalanobis' approach to development ignores price and demand considerations completely. The targets for the four sectors in his model appear to be based mainly on the goal of creating heavy industry, which is assumed to be the key to future growth. Criteria of efficiency and comparative advantage are entirely omitted from his analysis.

Although there are traces of the Mahalanobis approach in the second and third five-year plans formulated by the Indian Planning Commission, the final results are much less extreme. One basic problem is that exports are expected to rise only half as fast as national income between the first and third plan periods, while demand for the goods initially imported tends to rise much more rapidly. The inelastic demand for traditional Indian exports means that a considerable proportion of investment must be devoted to commodities that are presently imported. Within this category, the principles of comparative advantage should apply. In actuality, the emphasis has shifted somewhat from heavy industry in the second plan to agriculture in the third. In the latter document [19], increasing self-sufficiency in basic industrial commodities—steel, petroleum, machinery, etc.—is listed as a high-priority objective, but so is the maximum development of agriculture. Whether the resulting targets are consistent with comparative advantage is not considered in the published analysis.²⁰

The balance-of-payments difficulties of many Latin American countries have also been a major factor in shaping the programming procedure developed by the Economic Commission for Latin America [57]. This approach has been applied in considerable detail in studies of Colombia [58], Argentina [59], and Peru [60]. One basic conclusion of these studies is that the growth of exports will be much slower than the growth of demand for goods that are currently imported. Investment therefore has to be heavily oriented toward import substitution, and the equality of supply and demand must be tested on a commodity basis to avoid balance-of-payments difficulties. In the three cases mentioned, this balancing process is carried out by means of an input-

²⁰ On the basis of a simplified linear-programming model, Sandee [45, p. 25] finds that "up to 1970 more effective ways to employ capital for development exist than highly capital intensive steel-making," suggesting that an analysis of comparative advantage would indicate more reliance on imports. The nonmarket benefits of production are omitted from his analysis, however.

output analysis in which imported goods are distinguished from domestic products in each category.

In principle, comparative advantage can be used in the ECLA procedure as a basis for the choice of import substitutes, but this has apparently been done only to a limited degree: Since the main emphasis is on balance, there is a danger that the initial assumptions as to levels of exports will not be re-examined after the extent of import substitution required by a given program has been determined. The result may be a considerably lower productivity of investment in import substitutes than in exports if the two are not systematically compared. The drawbacks to this procedure are more serious in small countries like Colombia and Peru than in a large country like India, in which imports supply a smaller fraction of the total demand for commodities.

B. Procedures Emphasizing Comparative Advantage

Among countries having development programs, procedures that stress comparative advantage are less common than those emphasizing balance. Practically all policy statements list among their priority criteria factors presumably leading to comparative advantage, but there is little evidence as to how they are applied in drawing up programs.

The development procedures of the government of Puerto Rico come as close to being a pure application of comparative advantage as Soviet procedures are of principles of balanced growth. Unlike many low-income countries, Puerto Rico has an elastic demand for its exports to the U.S. market and can attract U.S. capital for profitable investments. The government's policy has been to give tax remission for ten years and to provide overhead facilities, labor training, and other inducements to industries that will benefit the island's economy. In deciding which industries to promote, the Economic Development Authority has studied the long-term comparative advantage of a large number of alternative projects, since comparative advantage will lead to both satisfactory profits and maximum income. Low-cost labor (even with allowance for differences in productivity) has been the main element in comparative advantage, since most industrial materials must be imported. Allowance is also made for external economies in industries that will supply inputs to other sectors.²¹

Under this policy, the growth of per capita income has been as rapid (nearly 5 per cent annually) and the development of industry as marked (from 19 per cent to 25 per cent of GNP) over the years 1948-1958 as in any country following a deliberate policy of balanced

²¹ The Puerto Rican experience is discussed by Baer [2]; the evaluation procedures are described in mimeographed reports of the Economic Development Authority.

growth. The planning procedure depends very largely on the particular relation of Puerto Rico to the United States and its small size. These factors make it unnecessary to worry about the elasticity of demand for exports or the dangers of dependence on foreign sources for essential imports, which so preoccupy the Indian and Latin American planners. With reliable export and import markets, domestic balance is not a problem.

Since the assumptions of the classical model are not approached so closely in most underdeveloped countries as in Puerto Rico, the calculation of comparative advantage usually departs farther from the market evaluation. In a more typical case the Philippine National Economic Council has outlined a procedure for applying the SMP formula under Philippine conditions [39]. This analysis starts from the market evaluation of the profitability of an investment and adds corrections for the project's effect on the balance of payments, its use of domestic materials, and its use of domestic labor, each with a suitable weight. This procedure may be justified by comparison to the linear programming criterion of social profit. In principle the proper correction to private profit is obtained by giving each a value equal to the difference between its shadow price and its market price.²² In the Philippines, this would mean a bonus for labor and a penalty for foreign exchange use (or a bonus for foreign exchange saving). Higgins [22, pp. 654-62] shows that the weights assigned in the Philippines tend to exaggerate these effects. The use of the same weight for all domestic materials may lead to serious error, since not all are overvalued by market prices.

The government of Israel has developed one of the most systematic procedures for measuring comparative advantage as a basis for allocating investment funds and foreign exchange. In effect, the Ministry of Finance evaluates projects on the basis of accounting prices for foreign exchange and capital, taking into account the indirect use of foreign exchange in sectors supplying inputs such as power or industrial materials. The calculation is summed up as the cost in domestic resources of a dollar earned or saved, and it is applied equally to exports and to import substitutes. The calculation of domestic value added is also made by exporters as a basis for export subsidies [3, p. 23]. In allocating the government's development budget, priority is given to projects

²² The social profit, Π_j , may be expressed as:

$$(4b) \quad \Pi_j = \bar{\Pi}_j + \sum a_{ij} \Delta P_i,$$

where $\bar{\Pi}_j$ is private profit per unit of output calculated at market prices and ΔP_i is the difference between the market price and shadow price of commodity i . The elements ΔP_i may be regarded as weights attached to each input or output coefficient.

whose domestic cost of earning or saving foreign exchange is less than the current estimate of its accounting price. This procedure can also be rationalized by means of the linear programming criterion of social profitability. Instead of measuring the value derived per unit of investment with accounting prices for foreign exchange and labor, as in the SMP formula, the cost per unit of foreign exchange acquired is computed using an accounting price for capital. When the same shadow prices are used, all three measures give the same result.

Although it is dangerous to generalize from the limited evidence on development policies that is available, there appears to be some relation between the type of procedure adopted and the characteristics of the economy in a number of the cases examined. Small countries are forced to pay more attention to comparative advantage because they cannot hope to produce the whole range of manufactures and primary products, while large countries may be tempted to follow more autarchic policies.²³ The importance given to balanced growth also depends to a large extent on the country's recent experience with its export markets and the state of its foreign exchange reserves and borrowing capacity. Puerto Rico and Israel can both count on substantial capital inflows which make it unnecessary for them to approach balanced trade in the near future, while India has much less leeway.

IV. *Conclusions*

This paper has considered development policy from the standpoint of economic theory, as a problem in operations research, and as it is actually carried on by governments. Much of the confusion in the field stems from a failure to distinguish these different levels of analysis. Theorists are prone to suggest decision rules that omit some of the relevant institutional limits, while economists who have been working in particular areas often arrive at conclusions that do not fit other cases. As in other fields of economics, most of the disagreement can be traced to implicit differences in assumptions.

There are a number of contradictions between the implications of trade theory and growth theory. To make the two theories consistent, it is necessary to discard the assumption of equilibrium in factor markets, to allow for changes in the quantity and quality of factors of production over time, and to take account of internal and external economies of scale. Although under these assumptions market forces do not necessarily lead to efficient resource allocation, a pattern of production and trade can be determined that maximizes income over time. The commodities to be produced and traded cannot be determined by a

²³ Japan is one exception to this generalization, partly due to its dependence on imported raw materials.

simple ranking procedure along the lines of classical comparative advantage because of the interdependence among sectors. At best, it may be possible to say, for example, that a country has a comparative advantage in steel production for a specified set of production levels in supplying and using sectors. In advanced countries, this qualification may be unimportant, but in the less developed ones it is crucial in a number of industries.

Much of the attack on the use of comparative advantage is based on its omission of various nonmarket elements. It is assumed that the inclusion of the latter favors the development of industry, and special benefits are often attributed to capital goods and heavy industry. The intangible benefits stemming from trade in the form of new products, improved technology, and technical assistance tend to be overlooked in this discussion. Although I support the critics who wish to include more of growth theory in determining the desirability of specialization, I doubt that this extension will favor balanced growth to the extent that they suppose.

The other main theoretical attack on comparative advantage is aimed at its supposed support for continued specialization in primary exports. Granting the low elasticity of demand for many primary products, it is wrong to conclude that comparative advantage is thereby superseded by principles of balanced growth. The increasing shortage of foreign exchange makes it even more important to economize on its use and to seek efficient ways for increasing its supply. The comparison of domestic to foreign sources of supply that is implied by comparative advantage is no less relevant to this situation than to the case in which investment is more evenly divided between exports and import substitutes.

The aspects of growth theory which do not seem to be reconcilable with the notion of comparative advantage are the sociological and political effects of choosing one production pattern instead of another. While the concept of opportunity cost can be extended to include a number of nonmarket phenomena, such as labor training and overhead facilities, it can hardly be stretched to cover differences in fertility rates or political attitudes. So far as I can see, in the present state of knowledge of social phenomena, considerations such as these may be used to modify the results of economic analysis but cannot be directly incorporated into it.

At the level of operations research, the search for simple decision rules for investment in low-income countries seems to have been useful mainly in exposing the fallacies in some of the common rules of thumb. One can specify conditions under which ratios such as the capital intensity or the effect on the balance of payments would be a valid indi-

cator of the desirability of an investment, but the apparent gain in simplicity is offset by the danger of applying the test in inappropriate circumstances. A more fruitful approach to partial equilibrium analysis is provided by the use of accounting prices to compute the social profitability of a given use of resources. This method allows simultaneously for several overvalued or undervalued inputs, and it can include whatever elements of general equilibrium analysis are available.

Since market forces cannot be relied on to balance supply and demand under conditions of initial disequilibrium and accelerated growth, a principal concern of development policy is to ensure the consistency of production levels with commodity demands and factor supplies. The technique of linear programming is designed to combine the test of consistency with the test of the social profitability of a given resource use. Although it cannot be applied very extensively in underdeveloped countries as yet, the programming methodology serves as a guide to improved practical measures.

To most economists, a survey of the procedures actually followed in designing development policy would probably suggest that balance is overemphasized and that the potential gains from trade are often neglected. This emphasis may be partly justified by the greater uncertainties attached to trade and by an aversion to risk that is greater than seems warranted to the outside observer. Better understanding of the working of the underdeveloped economies and better information for planning is needed to redress the balance and enable countries to secure the potential gains from trade without conflict with measures for domestic development.

REFERENCES

1. B. A. BALASSA, *The Hungarian Experience in Economic Planning*. New Haven 1959.
2. W. BAER, "Puerto Rico: an Evaluation of a Successful Development Program," *Quart. Jour. Econ.*, Nov. 1959, 73, 645-71.
3. BANK OF ISRAEL, *Annual Report, 1959*. Jerusalem 1960.
4. F. M. BATOR, "On Capital Productivity, Input Allocation, and Growth," *Quart. Jour. Econ.*, Feb. 1957, 71, 86-106.
5. N. S. BUCHANAN, *International Investment and Domestic Welfare*. New York 1945.
6. O. CASTELLINO, "La Scelta degli Investimenti nei Programmi di Sviluppo Economico," *L'Industria*, 1959, No. 1, 60-76.
7. R. E. CAVES, *Trade and Economic Structure*. Cambridge 1960.
8. H. B. CHENERY, "The Application of Investment Criteria," *Quart. Jour. Econ.*, Feb. 1953, 67, 76-96.
9. ———, "The Role of Industrialization in Development Programs," *Am. Econ. Rev., Proc.*, May 1955, 45, 40-57.

10. ———, "Development Policies and Programmes"; *Econ. Bull. for Latin America*, Mar. 1958, 3, 51-77.
11. ———, "The Interdependence of Investment Decisions," in Abramovitz *et al.*, *The Allocation of Economic Resources*. Stanford 1959.
12. M. DOBB, *An Essay on Economic Growth and Planning*. London 1960.
13. R. DORFMAN, P. A. SAMUELSON, AND R. M. SOLOW, *Linear Programming and Economic Analysis*. New York 1958.
14. O. ECKSTEIN, "Investment Criteria for Economic Development and the Theory of Intertemporal Welfare Economics," *Quart. Jour. Econ.*, Feb. 1957, 71, 56-85.
15. R. FRISCH, *A Method of Working out a Macroeconomic Plan Frame with Particular Reference to the Evaluation of Development Projects, Foreign Trade and Employment*. Oslo 1958 (mimeo.).
16. ———, *A Powerful Method of Approximation in Optimum Investment Computations of the Normal Type*. Oslo 1959 (mimeo.).
17. W. GALENSON AND H. LEIBENSTEIN, "Investment Criteria, Productivity, and Economic Development," *Quart. Jour. Econ.*, Aug. 1955, 69, 343-70.
18. A. GERSCHENKRON, "Economic Backwardness in Historical Perspective," in B. Hoselitz, ed., *The Progress of Underdeveloped Areas*, Chicago 1952.
19. GOVERNMENT OF INDIA PLANNING COMMISSION, *The Third Five Year Plan*. New Delhi 1960.
20. G. HABERLER, "Some Problems in the Pure Theory of International Trade," *Econ. Jour.*, June 1950, 60, 223-40.
21. E. HAGEN, "An Economic Justification of Protectionism," *Quart. Jour. Econ.*, Nov. 1958, 72, 496-514.
22. B. HIGGINS, *Economic Development*. New York 1958.
23. A. O. HIRSCHMAN, *The Strategy of Economic Development*. New Haven 1958.
24. ———, "Investment Criteria and Capital Intensity Once Again," *Quart. Jour. Econ.*, Aug. 1958, 72, 469-71.
25. A. E. KAHN, "Investment Criteria in Development Programs," *Quart. Jour. Econ.*, Feb. 1951, 65, 38-61.
26. C. P. KINDLEBERGER, *The Terms of Trade: A European Case Study*. New York 1956.
27. R. KOMIYA, "A Note on Professor Mahalonobis' Model of Indian Economic Planning," *Rev. Econ. Stat.*, Feb. 1959, 41, 29-35.
28. H. LEIBENSTEIN, "Why Do We Disagree on Investment Policies for Development?" *Indian Econ. Jour.*, Apr. 1958, 5, 369-86.
29. W. A. LEWIS, "Economic Development with Unlimited Supplies of Labor," *Manchester School*, May 1954.
30. P. C. MAHALANOBIS, "The Approach of Operational Research to Planning in India," *Sankhya*, Dec. 1955, 16, 3-131.
31. K. MANDELBAUM, *The Industrialization of Backward Areas*. Oxford 1945.
32. J. M. MONTIAS, "Planning with Material Balances in Soviet-type Economies," *Am. Econ. Rev.*, Dec. 1959, 49, 963-85.
33. H. MYINT, "The Classical Theory of International Trade and the Underdeveloped Countries," *Econ. Jour.*, June 1958, 68, 317-37.

34. G. MYRDAL, *Economic Theory and Under-developed Regions*. London 1957.
35. H. NEISSER, "Investment Criteria, Productivity and Economic Development," *Quart. Jour. Econ.*, Nov. 1956, 70, 644-47.
36. R. NURKSE, *Problems of Capital Formation in Underdeveloped Countries*. Oxford 1953.
37. ———, *Patterns of Trade and Development*. Stockholm 1959.
38. P. G. OHLIN, "Balanced Economic Growth in History," *Am. Econ. Rev., Proc.*, May 1959, 49, 338-53.
39. THE PHILIPPINES NATIONAL ECONOMIC COUNCIL, *The Five-Year Economic and Social Development Program for Fiscal Years 1957-1961*. Manila 1957.
40. J. J. POLAK, "Balance of Payments Problems of Countries Reconstructing with the Help of Foreign Loans," *Quart. Jour. Econ.*, Feb. 1943, 57, 208-40.
41. R. PREBISCH, "Commercial Policy in the Underdeveloped Countries," *Am. Econ. Rev., Proc.*, May 1959, 49, 251-73.
42. A. QAYUM, *Theory and Policy of Accounting Prices*. Amsterdam 1959.
43. P. ROSENSTEIN-RODAN, "Problems of Industrialization of Eastern and South-Eastern Europe," *Econ. Jour.*, June-Sept. 1943, 53, 205-16.
44. W. W. ROSTOW, "The Take-Off into Self-Sustained Growth," *Econ. Jour.*, Mar. 1956, 66, 25-48.
45. J. SANDEE, *A Long-Term Planning Model for India*. United Nations pub. New York 1959.
46. T. W. SCHULTZ, "Latin American Economic Policy Lessons," *Am. Econ. Rev., Proc.*, May 1956, 46, 425-32.
47. T. SCITOVSKY, "Two Concepts of External Economies," *Jour. Pol. Econ.*, April 1954, 62, 143-51.
48. ———, "Growth—Balanced or Unbalanced," in M. Abramovitz *et al.*, *The Allocation of Economic Resources*, Stanford 1959.
49. A. K. SEN, "Some Notes on the Choice of Capital Intensity in Development Planning," *Quart. Jour. Econ.*, Nov. 1957, 71, 561-84.
50. J. SHEAHAN, "International Specialization and the Concept of Balanced Growth," *Quart. Jour. Econ.*, May 1958, 72, 183-97.
51. H. W. SINGER, "The Distribution of Gains Between Investing and Borrowing Countries," *Amer. Econ. Rev., Proc.*, May 1950, 40, 473-85.
52. G. STIGLER, "Production and Distribution in the Short Run," reprinted in Am. Econ. Assoc., *Readings in the Theory of Income Distribution*, Philadelphia 1946.
53. P. STREETEN, "Unbalanced Growth," *Oxford Econ. Papers*, June 1959, 11, 167-91.
54. J. TINBERGEN, "The Relevance of Theoretical Criteria in the Selection of Investment Plans," in M. Millikan, ed., *Investment Criteria and Economic Growth*, Cambridge 1955.
55. ———, *Economic Policy: Principles and Design*. Amsterdam 1956.
56. ———, *The Design of Development*. Baltimore 1958.

57. UNITED NATIONS, DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS, *Analyses and Projections of Economic Development*. New York 1955.
58. ———, *Analyses and Projections of Economic Development*. III. *The Economic Development of Columbia*. Geneva 1957.
59. ———, *Analyses and Projections of Economic Development*. V. *The Economic Development of Argentina*. Mexico City 1960.
60. ———, *Analyses and Projections of Economic Development*. VI. *The Industrial Development of Peru*. Mexico City 1959.
61. UNITED NATIONS, *Manual of Economic Development Projects*. New York 1959.
62. A. VAIDYANATHAN, "A Survey of the Literature on Investment Criteria and Development of Underdeveloped Countries," *Ind. Econ. Jour.*, Oct. 1956, 4, 122-44.
63. J. VINER, *International Trade and Economic Development*. Oxford 1953.
64. ———, "Stability and Progress: The Poorer Countries' Problem," in D. Hague, ed., *Stability and Progress in the World Economy*, London 1958 (with comment by R. Nurkse).
65. P. WILES, "Growth versus Choice," *Econ. Jour.*, June 1956, 66, 244-55.
66. J. H. WILLIAMS, "The Theory of International Trade Reconsidered," *Econ. Jour.*, June 1929, 39, 195-209. Reprinted in Am. Econ. Assoc., *Readings in the Theory of International Trade*, Philadelphia 1949.

THE DIFFERENTIAL EFFECTS OF TIGHT MONEY

By G. L. BACH AND C. J. HUIZENGA*

Restrictive monetary policy is widely opposed because of its alleged undesirably discriminatory effects. Tight money, it is claimed, lets big borrowers go free while shutting off little ones. It restricts construction activity while letting investment in plant and equipment boom. Conversely, it restricts investment so sharply it induces recession. It runs up interest costs to those least able to pay. It penalizes new borrowers at the expense of old established customers. All these claims, and many more, have been urged upon Congress, by economists and by others, as powerful reasons against reliance on restrictive monetary policy to check moderate inflation.

Given substantially full employment, any restrictive policy is discriminatory in the sense that it charges the allocation of resources from what would have prevailed in the absence of the restriction. Assume full employment with excess demand (inflationary pressure) and some given allocation of resources. If monetary policy is now used to produce a smaller money supply than otherwise would have existed, a different allocation of resources may result. It is this shift in resources which is presumably meant when critics speak of the discriminatory (or differential) effects of tight money. We shall use the term in this sense.

The following pages describe an investigation of the "discriminatory" effects of tight money which isolates these effects by studying the differential lending-investing policies during the 1955-57 period of "tight" banks in contrast to those of "loose" banks which were otherwise substantially identical but where there was little or no pressure of tight money.

* The authors are, respectively, professor of economics at Carnegie Institute of Technology and acting assistant professor of business economics at the University of California, Los Angeles. We are indebted to the Ford Foundation for faculty research and doctoral fellowships which made this research possible, and to the Commission on Money and Credit for financial support. We are equally indebted to the Board of Governors of the Federal Reserve System for making available the basic data, for extensive statistical work in restructuring data to fit the needs of the study, and for discussions of the analytical problems. In the latter connection, James Eckert, Albert Koch, Roland Robinson and Edward Snyder were especially helpful, as were our colleagues Edwin Mansfield, Allan Meltzer and Franco Modigliani.

I. *Design of Study*

Identification of possible discriminatory effects of tight money during any period of credit restraint is difficult. In 1955-57, for example, we know that commercial bank lending to large borrowers rose much more than that to small borrowers. But this fact is not necessarily evidence that tight money led banks to discriminate against small borrowers. Instead, the observed results may have arisen largely from the demand side of markets rather than from the supply side, and indeed there is much evidence that such was the case in that particular period. The problem is to devise a method of isolating the supply effects (that is, the discriminatory effects of tight money in restricting lending) as distinct from the effects of differing demands for credit.

To isolate the effects of tight money on the behavior of lenders, the following basic design was used. First a period was chosen when money was generally agreed to be tight and growing tighter—October 1955 to October 1957. Then a large sample of banks (about 1700) was chosen, large enough to permit stratification so that substantial numbers of banks in all major cells were presumably substantially identical in all respects (including potential loan demand) except for the differential impact of tight money upon them. Then the banks were divided into three subgroups—"tight," "medium," and "loose," depending on the degree of tightness induced in them by the over-all tightness of money. The tightest quartile of banks was placed in the tight group, the next two quartiles in the medium group, and the loosest quartile in the loose group. The loose banks, as is explained below, were selected so that it would be agreed that they were loose by almost any reasonable test—for example, they were not tight by standard tests at the beginning of the period, and they gained more deposits over the period than they increased their loans and investments.¹

Then the lending and investing behavior of these three groups of banks was compared over the period, with the presumption that the tight quartile would reflect the differential impact of tight money on the supply side, when compared with the loose quartile which apparently felt little if any pressure of tightness. This comparison between the tight and loose quartiles seems especially apt to isolate the differential effects of tight money, since loose banks were clearly quite loose and there is little evidence that they refused any borrowers because of shortage of lending power or for any reason other than failure of borrowers to meet general banking standards of credit-worthiness.

¹ The terms tight, medium and loose are intended as brief terms to indicate relative status. They are not intended to convey absolute status with any precision, except, as is noted below, that the loose banks were demonstrably loose by almost any reasonable standard.

In testing different hypotheses about possible discriminatory effects of tight money, banks were stratified by size and other major characteristics within each of the three tightness groupings, to assure comparability on factors other than tightness.

A. Nature of Sample and Information Obtained

The basic sample consisted of about 1700 Federal Reserve member banks, with identical banks reporting in October 1955 and October 1957. Reporting banks held nearly 90 per cent of all commercial and industrial loans at member banks. The sample provided almost complete coverage of all central reserve city and reserve city banks, with about one-fourth of all country member banks. The sample was drawn on a stratified basis by the Federal Reserve System for its two major studies of commercial and industrial loans in 1955 and 1957. All sample data were then "blown up" to cover all commercial member banks in the United States.²

Information in both years was collected on the following items: (1) complete call report data for each reporting bank, including information on all major asset and liability items; (2) the following information on individual commercial and industrial loans on the books of each reporting bank as of October 5, 1955 and October 16, 1957: (a) business of borrower (13 categories); (b) total assets of borrower; (c) form of business organization—incorporated or unincorporated; (d) amount of loan outstanding; (e) original amount of loan; (f) whether loan was a term loan; (g) whether loan was secured or unsecured; (h) interest rate on loan.

B. Measures of Bank Tightness

For explaining banker (lender) behavior, how tight a bank is depends on how tight the banker (the decision-maker) feels it is. One bank may be extremely tight for lending purposes, even though it has a large volume of excess reserves and liquid securities, *if* the banker believes that these reserves and securities are essential to the sound operation of the bank. Another bank may be loose for lending purposes, even though it has very small excess reserves and only a modest supply of liquid securities, *if* the banker feels that he nevertheless has more reserves and more securities than he needs for normal operating purposes (assuming that he is within standard examination regulations). Thus, standard measures like excess reserves and free reserves are not reliable measures of bank tightness for lending purposes.

This point becomes clearer if one remembers that the individual

²Details of the sampling procedure and the reporting forms were published in the *Federal Reserve Bulletin* [9, 10].

banker can alter his volume of excess reserves (and hence his lending power) with relative freedom by restructuring his asset portfolio—say by selling off bills or bonds. Thus one must consider the whole asset portfolio—not just a simple measure of excess or free reserves—if he is to have a reasonable measure of how tight the individual bank is. And the banking system as a whole can similarly increase its excess reserves by selling securities to others, though to a lesser extent since it must find noncommercial-bank buyers, a limitation which the individual bank does not face.

This poses difficult problems of measuring the tightness of individual banks and of the banking system. We cannot peer into the banker's mind to see what makes him feel tight or loose. Indeed, the banker's own word is possibly not to be accepted. So we need to search for surrogate measures.

Banking System as a Whole. Over the period from October 1955 to October 1957, it is widely agreed that money was tight and becoming increasingly tighter for the banking system as a whole.³ At least four types of evidence support this belief.

First, Federal Reserve authorities, bankers, and virtually all observers in the financial press spoke out on the increasing tightness of money. While such statements are of course not conclusive, their general uniformity was striking.⁴

Second, over the period commercial banks shifted heavily out of long-term bonds into short-term government securities and loans. Between October 1955 and October 1957, loans at all members banks increased from \$67 billion to \$80 billion while bonds of 5 years or longer maturity declined from \$24 billion to \$10 billion. This shift was a clear indication of increasing pressure on the banking system so far as the ability to make loans was concerned.

Third, interest rates had risen substantially by the beginning of the period, and continued to rise through it, as is indicated by Table 1.

Fourth, there was virtually no growth in the money supply, although the volume of transactions to be financed and population rose substantially over the period. Currency and demand deposits outside banks totaled \$132 billion in October 1955, and only \$134 billion in October 1957. At the same time gross national product rose from \$392 billion

³The exact dates chosen (in October of each year) were dictated by the availability of data—both call-report data and, more important, data on the large-scale Federal Reserve commercial loan surveys which were available for only those two specific months. Actually, a period ending a few months earlier, in the summer of 1957, would have been better, since apparently the peak of tight money occurred some time in the late summer. However, there was no substantial easing of money over the few months before October.

⁴See, for example, the annual reports of the Board of Governors of the Federal Reserve System [7]; "Bank Credit and Money" in [5] [6]; the *New York Times* financial pages [12]; and *Business Week* [8].

TABLE 1—INTEREST RATES, OCTOBER 1955–OCTOBER 1957

Average for 1954		October 1955	October 1957
U. S. Treasury bills	.9	2.2	3.6
Prime commercial paper	1.6	2.7	4.1
Aaa corporate bonds	2.9	3.1	4.1

(annual rate) for the third quarter of 1955 to \$440 billion (annual rate) for the third quarter of 1957.⁵

Clearly, there have been other periods when money was tighter, and in part the increasing tightness was a return to more normal times from the very low interest rates of the preceding decades. For purposes of this study, however, it is important merely that money was tight enough to put the tighter banks under substantial pressure to refuse some otherwise acceptable borrowers, and that it was becoming tighter. These conditions were clearly present. Nor do the findings depend on the extent to which this tightness reflected conscious Federal Reserve policy. Since the money supply remained roughly constant, the increasing tightness obviously reflected mainly increasing demand for money.

Individual Banks. To test tight money hypotheses, we ranked all individual banks by degree of tightness as of October 1955, and by increase in tightness between October 1955 and October 1957. A more satisfactory measure than excess or free reserves appeared to be the ratio:

$$\frac{\text{excess reserves} - \text{borrowing} + \text{government bills and certificates}}{\text{deposits}}$$

We call this a looseness ratio, since an increase in the ratio means that the bank has become looser for lending purposes.

This ratio was used to rank individual banks as of October 1955. The ratio reflects the fact that banks consider short-term governments

⁵ The traditional measures of excess reserves and "free" reserves provide little help in assessing the tightness of the banking system over the period in question. Excess reserves averaged about \$500 million during October of each year. This reflected the fact that excess reserves were substantially at their operating minimum by 1955, given the mores of many bankers about excess reserves. Thus they could not practically be reduced further. Free reserves (excess reserves minus borrowing) averaged —\$360 million in October 1955 and —\$344 million in October 1957. Banks that were willing to borrow at the Federal Reserve were doing so substantially by October 1955, and again to about the same extent in October 1957. Both the free and the excess reserve figures emphasize that many banks nowadays manage their portfolios so as to hold excess and free reserves at what they consider reasonable minimum levels, especially when interest rates are high. Thus, whether money is loose or tight, excess reserves for the system stay at about the same level. Free reserves are more volatile and are significant for many large banks. But they too provide a very imperfect measure of the tightness of the system, for the reasons noted above and because only a small fraction of banks view borrowing at the Federal Reserve as a significant device for adjusting their reserve positions.

as secondary reserves, only slightly differentiated from actual reserves. Moreover, this ratio varies appreciably at individual banks with changes in economic conditions, at the same time that the ratio of excess reserves, or even free reserves, to deposits varies little for most banks. The ratio falls (indicates tightening) for the banking system as a whole and for most individual banks over the 1955-57 period, when we know that money was tightening for the system as a whole. On the other hand, the ratio has weaknesses. For example, it does not reflect the fact that interbank deposits provide a special source of liquidity to some banks; thus, most small country banks were probably relatively looser than the ratio shows. Neither is vault cash included. Nor are near-maturity securities other than bills and certificates. Most important, it does not include longer-term government securities, but there are convincing reasons for this exclusion.⁶

We have no clean-cut objective basis for selecting the looseness ratio used. The case is that it is a reasonable measure a priori, and that all the likely alternatives have serious drawbacks. The ratio was tested against other measures, including excess and free reserves. For example, the ratio of loans to government securities was examined, on the theory that the higher the loan ratio becomes the tighter the bank will be since it has less opportunity left to shift from government securities to loans. This measure, like the looseness ratio including government bonds, proved of limited usefulness because it mainly reflected the lending-investment preferences of individual banks, rather than serving as a fundamental measure of tightness for the rank-ordering of banks.

To measure the *change* in tightness between October 1955 and October 1957 two tests were initially applied. First, all individual banks were ranked by the decrease in the looseness ratio between October 1955 and October 1957. Second, banks were ranked according to the percentage increase in their deposits over the period. For the individual bank, as distinguished from the banking system, it is primarily gain or loss of deposits which makes the bank looser or tighter for new lending and investing. Therefore, the simplest measure of whether an individual bank is growing looser or tighter is the extent to which it is gaining or losing deposits. Thus, all banks were ranked by percentage increase

⁶ Government bonds, which are not included in the numerator, obviously help increase liquidity and hence decrease the tightness of a bank. While individual banks can obtain funds for loans by selling government securities, holdings of long-term governments at many banks are so large relative to bills, certificates, and free reserves, that their inclusion would swamp the ratio. Thus the ratio with long-term government securities included would tend to reflect primarily the investment preferences of individual banks and would lose most of its virtue as a measure of tightness for ranking individual banks.

To avoid the danger that the deposits and reserve figures in the ratio would be thrown off by special temporary factors, monthly averages were used, rather than one-day figures.

in deposits over the two-year period. Banks with the greatest loss of deposits showed the greatest increase in tightness, with others ranked in order of deposit gain.

Broadly, the rank-order results for individual banks were similar using these two methods over the 1955-57 period. However, the change-in-deposits method both seemed more significant in explaining individual bank lending-investment behavior and offered a more sharply discriminating measure as among individual banks. This is because changes in the tightness ratio were quite small for most banks, so that the individual bank ranking might be considerably influenced by small special circumstances, while differences in the rate of deposit growth were large. Thus, we decided to use the second measure alone—change in deposits between October 1955 and October 1957—as the criterion of the extent to which banks became tighter or looser.⁷

To obtain the final tightness ranking of all individual banks, the ranking as of 1955 and the ranking by increase in tightness for the 1955-57 period were combined in the following way. First, banks were divided into the tightest and loosest halves on the basis of the looseness ratio as of October 1955. Then, all banks in the tightest half for 1955 were rank-ordered by the degree to which their tightness increased over the succeeding two years, as measured by relative deposit loss or gain. The tight group for the study (the tightest quartile) was then obtained by taking the 50 per cent of the tight half as of 1955 which showed the greatest further increase in tightness by 1957. Similarly, the loosest half as of 1955 was rank-ordered by change in tightness, and the 50 per cent showing the greatest increase in looseness was considered the loose group for the study. The remaining two inner quartiles were considered the medium group.⁸

This test combines tightness as of the beginning of the period with change in tightness. In principle, there need be no relationship between these two measures. On the other hand, the purpose was to segregate at the two extremes banks which both were tight in absolute level and became tighter, from those that were clearly loose in absolute level and became looser. The procedure followed achieved this result. Thus, banks in the loose quartile had looseness ratios of 3 per cent and higher in October 1955, as compared to only 1+ per cent for all banks. More-

⁷ A further study was made to test the significance of using both measures. Limitation of the tight group to banks that were in the tightest quartile by *both* the change-in-looseness ratio and the change-in-deposits tests eliminated only a small fraction of the banks. This further refinement was therefore dropped.

⁸ Since large city banks were heavily concentrated in the tight group, about 40 per cent of total commercial bank assets were included in that group. About 45 per cent were in the medium group, and about 15 per cent in the loose group in which smaller country banks predominated.

over, their gain in deposits ranged from 8 per cent to over 100 per cent for the two-year period, compared to only a 4.5 per cent increase for the banking system as a whole—while about half the banks in the tight group actually lost deposits over the two-year period.⁹ Most important, the loose banks as a group gained more deposits over the period than they expanded their loans and investments. Thus, they obtained more new funds for loans and investments than they used. Under this circumstance it is hard to see how these banks can have felt themselves seriously restrained by tight money.¹⁰

C. *Hypotheses Investigated*

Using this analytical approach, five general hypotheses were considered: (1) That tight money induced banks to shift from government securities to loans. (2) That tight money led banks to discriminate against small borrowers in lending to businesses. (3) That tight money led banks to differentiate in favor of particular industry groups among business borrowers. (4) That tight money was effective in checking loans especially to those firms which were primarily responsible for the 1955-57 investment and inventory boom. (5) That tight money led banks to raise interest charges especially to small borrowers and to particular industry groups against which they wished to discriminate. The succeeding sections examine these hypotheses in turn.

II. *Effects on Bank Lending and Investing*

Table 2 compares the behavior of tight, medium, and loose banks in extending loans and investments over the 1955-57 period as money grew tighter. The left-hand portion of the table shows the percentage increases of total loans and investments and all major subclasses at loose, medium, and tight banks. Percentage increase figures are used because absolute figures would overweight the large banks in whatever groups they fell (largely the tight and medium groups). The right-hand portion of the table shows the relative increases (or decreases) in loans and investments at loose, medium, and tight banks. Though only relative changes are shown, the absolute amounts in all cells are large.

* Studies were made of the differences in groupings obtained by using either the as-of-1955 or the 1955-57 change measure alone. Surprisingly, not very great changes were obtained in the tight and loose groups by limiting the test to the situation as of October 1955 or by taking the change-in-deposit ranking alone. Thus, it appears that, in a broad sense, the banks that were already tight in late 1955 were the ones that tended to become even tighter over the following two years.

¹⁰ This same excess of new deposits over new loans and investments was shown by all small (country) banks as a group. There was a massive shift of deposits (and lending power) from very large to small banks. See [11, p. 424].

TABLE 2—INCREASE IN ASSET CLASSES, OCTOBER 1955–OCTOBER 1957

Asset Groups	Per Cent Increase at:			Relative Increase, with Per Cent Increase at Loose Banks=100		
	Loose Banks	Medium Banks	Tight Banks	Loose Banks	Medium Banks	Tight Banks
Total Loans and Investments	23	9	1	100	39	4
Bills and certificates	87	85	242	100	98	278
Other government securities under 5 years	36	26	12	100	72	33
Government securities over 5 years	-49	-52	-52	(*)	(*)	(*)
Other securities	34	5	-10	100	15	-129
Commercial and industrial loans	47	33	25	100	70	53
Real estate loans	32	16	6	100	50	19
Security loans	154	22	-20	100	14	-13
Agricultural loans	4	3	-10	100	75	-250
Loans to individuals	30	24	11	100	80	37

* Decrease in all groups.

As the left-hand portion shows, all banks increased their total loans and investments, but the loose banks did so the most. All banks sold off long-term government securities, presumably to obtain funds to increase other assets. All banks increased their holdings of short-term government securities and of commercial and industrial loans, loans to individuals, and real estate loans. The large percentage increase in short-term government securities of all banks, however, is caused in substantial part merely by long-term bonds moving down into the under-5 years category, rather than by actual bank sales of long-term bonds and purchase of short-term issues. If adjustment is made for this moving down in issues held, it is still true for all banks combined that there was some shift from long- to short-term government securities, but not much. This qualification does not, so far as we can tell, throw doubt on the *differential* behavior shown by loose and tight banks.¹¹

But there were appreciable differences in the behavior of tight and loose banks, as indicated by both halves of the table. Tight banks substantially reduced their holdings of other securities and of agricultural and security loans, while building up their short-term government securities more heavily than other banks. Their increase in loans was smaller than at other banks, and the differences in lending-investing

¹¹ This result seems surprising, since bankers are generally thought to draw first on short-term government securities to obtain loan funds when reserves become tight. Once adjustment is made for the downshifting of maturities, the actual dollar increase in bills and certificates at tight banks in Table 2 is small, but not insignificant. In any case, it is clear that tight banks drew most heavily on longer-term securities to obtain loan funds.

behavior at tight and loose banks were greatest within the loan categories. Tight banks increased real estate loans much less than did loose banks. But still more, they squeezed security and agricultural loans heavily to obtain funds for modest expansions in other loan categories. On the other hand, security and agricultural loans have never been dominant parts of the loan portfolio of the banking system, and the actual dollar shift of loans was more modest than might appear from the relative increases.¹²

It may be surprising that the tight banks did not shift *more* heavily from low- to high-yield assets under the pressure of tight money. The explanation is probably found largely in the force of traditional standards of banking practice. Most bankers, even when very tight, are reluctant to go beyond certain widespread notions of portfolio balance, which vary substantially by class and location of bank. For example, loans amounting to much more than 50 per cent of total assets apparently seem excessive, or at least of dubious propriety, to many bankers. Moreover, bankers understand their needs for liquidity and do not consider loans very liquid, in spite of the technical availability of the Federal Reserve rediscount window. Federal Reserve informal and formal actions reinforce this reluctance to rely extensively on rediscounting except in special temporary circumstances. Thus, many bankers continue to be the generally careful, cautious people they are commonly reputed to be in determining their portfolio balance, even when profits beckon in, say, higher automobile or real estate loans.¹³

If we assume that loose banks felt little or no restraint from tight money (as is strongly suggested by the evidence on pages 58-59), then the

¹² It might appear that this differential behavior of tight and loose banks is explained not by differing tightness, but merely by the fact that the expected mean value of the lending-investing behavior of the two groups is similar so that they will both tend to move toward it—the so-called “regression fallacy.” In Table 2, the greater shift from government securities to loans at loose banks might simply represent a movement of the loose and tight banks back toward a common portfolio balance after the tight group had by chance increased their loans more rapidly. But examination of the nine asset categories in Table 2 shows disparate behavior that is not explained by the regression fallacy. While we cannot be sure that the observed lending-investing differences between tight and loose banks are explained by differing tightness, the behavior is generally consistent with what we would a priori expect to observe from the tight-money hypothesis; and we find no other reasonable hypothesis to which the observed behavior can be attributed.

¹³ For a summary of banker interviews on the extent to which tight money changed lending policies, see [11, p. 431 ff.]

Apparently bank examination standards per se did not significantly limit bank loan expansion during the period. In an unpublished doctoral dissertation at Carnegie Institute of Technology, David Chambers found that even tight banks (using our groupings) generally stayed well within the formal examiners' limits. Other tests confirmed this general conclusion. But widespread knowledge of examiners' expectations, of course, may have helped mold bankers' mores as to how far they can reasonably go in shifting to loans, and to higher-yield risky loans within the loan category, when money becomes tight.

TABLE 3—INCREASE IN ASSETS AT BANKS OF DIFFERENT SIZES,
OCTOBER 1955–OCTOBER 1957

Assets at Banks of Different Sizes*	Per Cent Increase at:			Relative Increase, with Per Cent Increase at Loose Banks = 100		
	Loose Banks	Medium Banks	Tight Banks	Loose Banks	Medium Banks	Tight Banks
Total Loans and Investments						
All banks	23	9	1	100	39	4
Under \$10 million	31	10	1	100	32	3
\$10–100 million	19	4	4	100	21	21
\$100–1,000 million	23	13	0	100	54	0
Over \$1 billion	(b)	8	1		100	15
Bills and Certificates						
All banks	87	85	242	100	98	278
Under \$10 million	127	91	938	100	72	739
\$10–100 million	78	86	211	100	110	271
\$100–1,000 million	43	91	338	100	212	790
Over \$1 billion	(b)	66	85		100	129
Other Government Securities under 5 Years						
All banks	36	26	12	100	72	46
Under \$10 million	41	19	9	100	46	22
\$10–100 million	32	25	27	100	78	85
\$100–1,000 million	38	26	11	100	68	29
Over \$1 billion	(b)	35	7		100	19
Government Securities over 5 Years						
All banks	–49	–52	–52			
Under \$10 million	–48	–48	–45			
\$10–100 million	–51	–52	–55	(e)	(e)	(e)
\$100–1,000 million	–47	–51	–50			
Over \$1 billion	(b)	–56	–52			
Other Securities						
All banks	34	5	–10	100	15	–29
Under \$10 million	55	17	3	100	31	1
\$10–100 million	27	12	7	100	44	26
\$100–1,000 million	23	5	–18	100	21	–76
Over \$1 billion	(b)	–8	–17		(e)	(e)
Commercial and Industrial Loans						
All banks	47	33	25	100	70	53
Under \$10 million	68	18	4	100	26	6
\$10–100 million	36	24	16	100	67	44
\$100–1,000 million	51	31	19	100	60	37
Over \$1 billion	(b)	47	30		100	64

* All categories by bank size are based on deposits as of October, 1955.

b No banks over \$1 billion deposits in the loose category.

e Decrease in all groups.

TABLE 3—*Continued*

Real Estate Loans						
All banks	32	16	6	100	50	19
Under \$10 million	35	19	13	100	54	37
\$10-100 million	31	13	8	100	42	26
\$100-1,000 million	23	20	6	100	84	25
Over \$1 billion	(b)	14	3		100	22
Security Loans						
All banks	154	22	-20	100	14	-113
Under \$10 million	1248	542	948	100	43	76
\$10-100 million	13	68	16	100	523	123
\$100-1,000 million	54	-1	-1	100	-3	-2
Over \$1 billion	(b)	1	-32		100	-467
Agricultural Loans						
All banks	4	3	-10	100	75	-250
Under \$10 million	2	8	-5	100	400	-250
\$10-100 million	8	-27	9	100	-338	113
\$100-1,000 million	13	22	-25	100	175	-202
Over \$1 billion	(b)	1	-77		100	-1316
Loans to Individuals						
All banks	30	24	11	100	80	37
Under \$10 million	28	22	14	100	79	50
\$10-100 million	25	21	14	100	84	56
\$100-1,000 million	42	31	11	100	75	27
Over \$1 billion	(b)	18	7		100	39

comparative data for tight banks provide a direct measure of the differential impact of tight money. Even if the loose banks felt some restraint, since the tight banks clearly were much tighter the comparative data still provide direct evidence on the "discriminatory" effects of tight money on bank lending and investing behavior.

Attributing the differences in Table 2 to tight money implies that banks of comparable size in the three groups were substantially identical on other grounds, particularly in the loan demands they felt. We believe this was substantially true.¹⁴ The 1700 banks in the sample, as indicated above, provide substantially complete coverage of large- and medium-sized banks; and the sample of small banks was carefully stratified geographically and in terms of other significant bank characteristics. Lending-investing behavior varied at banks of different

¹⁴ This is, of course, a crucial assumption. Otherwise, observed differences between the behavior of tight and loose banks cannot necessarily be attributed primarily to differences in tightness. We can only report that, in addition to the careful sampling procedure followed, we have examined the bank groups in detail for other characteristics that might explain a significant part of the observed differences, and have been unable to find any—for example, geographical or urban vs. country location. It is important to remember, however, that separate analysis of banks of different sizes is important at several points because of the relative concentration of large, city banks in the tight group and small, country banks in the loose group.

sizes. Table 3 provides complete data, comparable to Table 2 above, for banks of different sizes.

Another possible objection to this interpretive pattern is that tight money may have driven some borrowers away from tight banks, but that these borrowers readily obtained the desired loans at loose banks (which were under little restraint), so the apparent differential effects at tight banks were just offset at loose banks. This hypothesis depends on the assumption of high mobility of borrowers between tight and loose banks. While some such mobility certainly existed, it was far from perfect. For large borrowers, loose banks of adequate size to make large loans were very scarce; there were no banks of over \$500 million deposits in the loose category. For smaller borrowers geographical mobility is limited, and even within given areas small firms find it harder to move readily from one bank to another for credit. It seems unlikely that the apparent impact of tight money at tight banks was completely, or even substantially, offset by shifts to loose banks.¹⁵

III. *Discrimination by Size of Business Borrower*

One of the commonest objections to the use of tight money to check moderate inflation is that this policy discriminates against small businesses. During the 1955-57 period as shown in Table 4, loans to big businesses did indeed expand much more than those to small businesses. This does not, however, necessarily mean that tight money led to discrimination against small borrowers. Instead, the pattern of loans may have reflected differing demands from large and small borrowers, where the loan demands of credit-worthy large borrowers (as judged by commercial banking credit standards) rose more rapidly than those from credit-worthy small borrowers.

In fact, the recent major Federal Reserve study of lending to small business arrives at this conclusion. This study found that most bankers were ready and willing to lend to small businesses whenever small businesses met normal standards of credit-worthiness. The demand for bank credit rose much less rapidly at small businesses between 1955 and 1957 than at large businesses, and the study reports that this was the main apparent reason for the differential growth in lending. Little evidence was found of discrimination against small borrowers, except in so far as refusal of loans because of inability to meet traditional banking credit standards is considered discrimination. But even here, there was little evidence of a substantial increase in potential small borrowers turned away over the period of tight money.¹⁶

¹⁵ For an analysis of the effect of monetary restraint on different sectors of the economy, which includes noncommercial bank lenders, see W. L. Smith [4, pp. 362-94].

¹⁶ For summaries of the evidence on a variety of tests, see especially [11, pp. 368-69,

TABLE 4—BANK LOANS TO BUSINESSES^a

Asset Size of Borrower ^b (000's omitted)	Per Cent Increase in Loans October 1955–October 1957
All borrowers	31.9
Less than \$50	— 3.0
\$50 to \$250	16.7
\$250 to \$1,000	24.8
\$1,000 to \$5,000	21.3
\$5,000 to \$25,000	24.7
\$25,000 to \$100,000	51.1
\$100,000 or more	66.4

^a Reproduced from [11, p. 37]. Data cover commercial and industrial loans at all member banks, plus real estate loans to businesses.

^b As of October 1955.

While the evidence generally fails to support the hypothesis that tight money leads banks to discriminate against small business borrowers, the argument has not been unmistakably refuted. We therefore conducted the following test of the hypothesis. The same groupings of banks into tight, medium, and loose were continued. To improve comparability banks were further divided into five different size-groups (based on volume of deposits). For this and all succeeding analyses of business loans, data include all commercial and industrial loans plus real estate loans to businesses at all member banks. The increase in loans to borrowers of different sizes was compared at tight, loose and medium banks, both for all banks combined and for banks in each of the five size-groups. If tight banks increased loans relatively more to large (compared to small) borrowers than did comparable loose banks, this test says that tight banks discriminated against small borrowers. Since the demand for loans was presumably substantially identical at tight and loose banks within bank size-groups and since loose banks were not restrained significantly by tight money, the analysis presumes that any such discrimination by tight banks would be attributable to tight money.

Table 5, for example, shows that at medium-sized banks loans to borrowers of all sizes rose more at loose than at tight banks, with the behavior of medium banks intermediate. We might say that tight banks discriminated against borrowers of all sizes, but they surely did not

374-81, 427-31, and 436-39]. The entire Part II of this volume, prepared by the Federal Reserve staff, provides a well-rounded analysis of the total problem of possible discrimination against small borrowers; it concludes that most evidence fails to support this criticism of tight money. A strong statement of the counterview is presented by J. K. Galbraith [1]; but without extensive empirical data to support his argument. Data contradicting the Galbraith argument are presented by Allan Meltzer [2].

TABLE 5—INCREASE IN LOANS TO BUSINESS BORROWERS AT MEDIUM-SIZED BANKS, OCTOBER 1955–OCTOBER 1957*

Assets of Borrower (000's omitted)	Per Cent Increase in Loans at:		
	Loose Banks	Medium Banks	Tight Banks
Under \$50	21	-11	-13
\$50-250	76	10	5
\$250-1,000	72	25	25
\$1,000-5,000	72	50	30
\$5,000-25,000	90	49	30
\$25,000-100,000	266	104	14
\$100,000 and over	25	30	22

* Commercial and industrial loans plus real estate loans to businesses at all member banks with total deposits of \$100-500 million as of October 1955.

discriminate especially against small borrowers. On the contrary, compared to loose banks, they discriminated especially against most *large* borrowers. That is, loose banks increased their loans to large borrowers by percentages far in excess of the increases of loans to small borrowers, while tight banks increased their loans to large borrowers only somewhat more than to small borrowers. Since borrower loan-demand was presumably substantially identical at loose, medium, and tight banks, this evidence appears, at least for these medium-sized banks, clearly to reject the hypothesis that tight money led banks to discriminate especially against small borrowers.¹⁷

Figures 1 through 6 are intended to facilitate examination of comparative increases in loans to different sized borrowers at loose, medium, and tight banks. Figure 1 shows the data for the entire banking system; the others show the data for banks in five different size groups. When the curves slope upward, large borrowers received larger percentage increases in loans than did small borrowers over the two-year period. When the curves slope downward, the reverse was true. Least-squares lines have been fitted to facilitate these visual comparisons. For example, Figure 4 shows the same data as are presented in Table 5 above.¹⁸

In Figure 1, for all banks combined, the upward slopes of the curves for tight, medium and loose banks are very similar, indicating similar

¹⁷ In Table 5, as in Table 4, the fact that loans rose more to large than to small borrowers does not necessarily indicate discrimination against small borrowers, because the observed differences may reflect primarily differences in loan demand from different sized borrowers. Only a test like that in the text to eliminate possible demand differences can isolate possible lender discrimination.

¹⁸ In Figure 1, total business loans in 1957 to all borrowers were \$40.8 billion. Loans to borrowers with assets under \$50,000 were \$1.5 billion; those to each other size group of borrower shown in Figure 1 ranged from about \$5 billion to \$8.8 billion.

treatment of small and large borrowers by all three groups of banks. The tight-bank least-squares line slopes upward slightly more than the other two, reflecting primarily as is explained below, the behavior of banks in the \$1000-\$1,000 million deposits size-class. But we in-

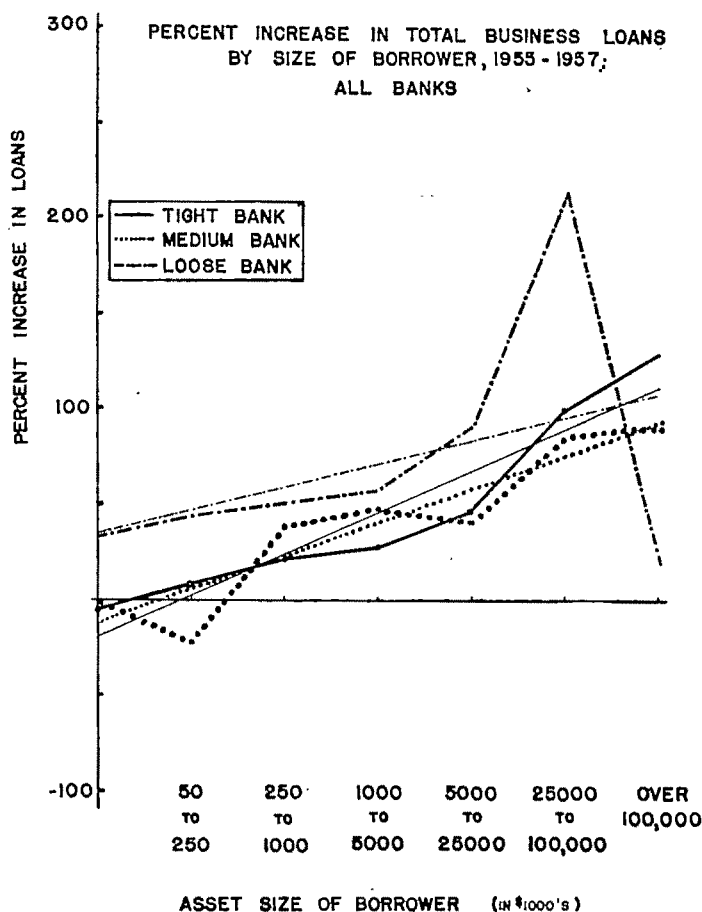


FIGURE 1

terpret the data as substantially rejecting the hypothesis that tight money led banks to discriminate especially against small business borrowers. Special allowance must be made for a crucial point on the loose-bank curve which is based on inadequate data,¹⁹ and the charts for the different bank size-groups strengthen this interpretation.

¹⁹ The final point on the loose-bank curve (loans to borrowers with over \$100,000,000 assets) pulls the loose-bank least-squares line down substantially. Since nearly all banks big enough to have such large borrowers were in the tight and medium groups, this particular point is based on a small number of relatively small loans, and has very limited

Figures 2 and 3 show the behavior of very large and large banks (over \$500 million deposits), which included no loose banks. In this comparison between tight and medium banks, tight banks in the \$500-\$1,000 million deposit class did discriminate more against small bor-

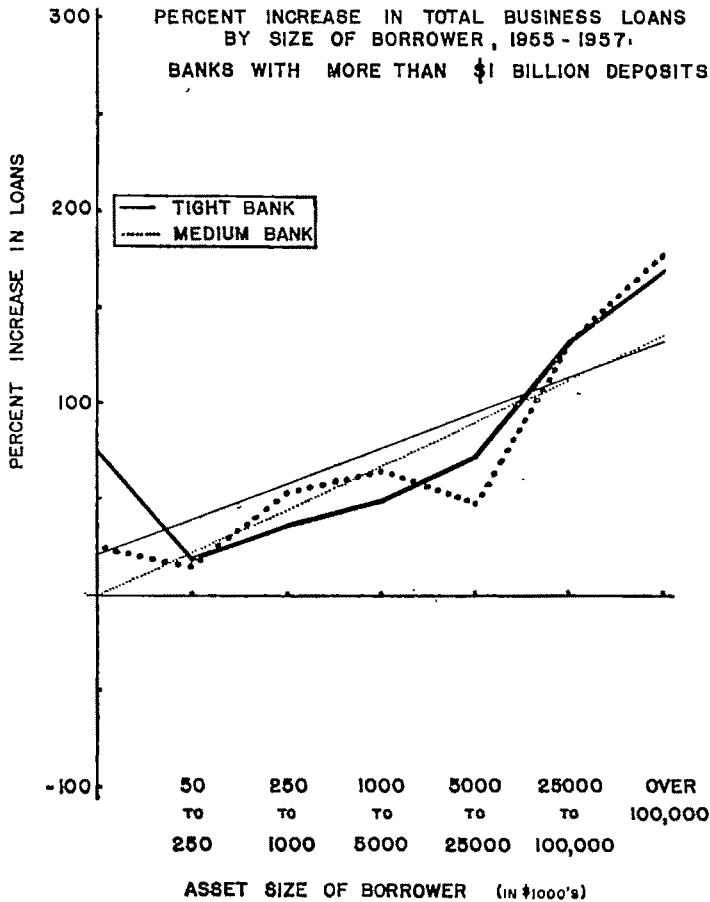


FIGURE 2

rowers than did medium banks of the same size. But Figures 4, 5 and 6 show no such discrimination at other banks where tight and loose banks could be compared directly. On the contrary, at these banks, tight money led to discrimination especially in favor of smaller borrowers.

significance. A least-squares fit omitting this one point would give a loose-bank line rising more sharply than the tight-bank line, and would thus remove the small amount of all-bank evidence appearing to support the hypothesis of discrimination against small borrowers.

Similar comparisons of loans by tight, medium and loose banks to different sized borrowers were made, breaking businesses into 13 different industry groups—five groups in manufacturing and mining, plus wholesale trade, retail trade, commodity dealers, sales finance companies, public utilities, construction, real estate, and services. The comparisons indicate a wide diversity of lending behavior to borrowers

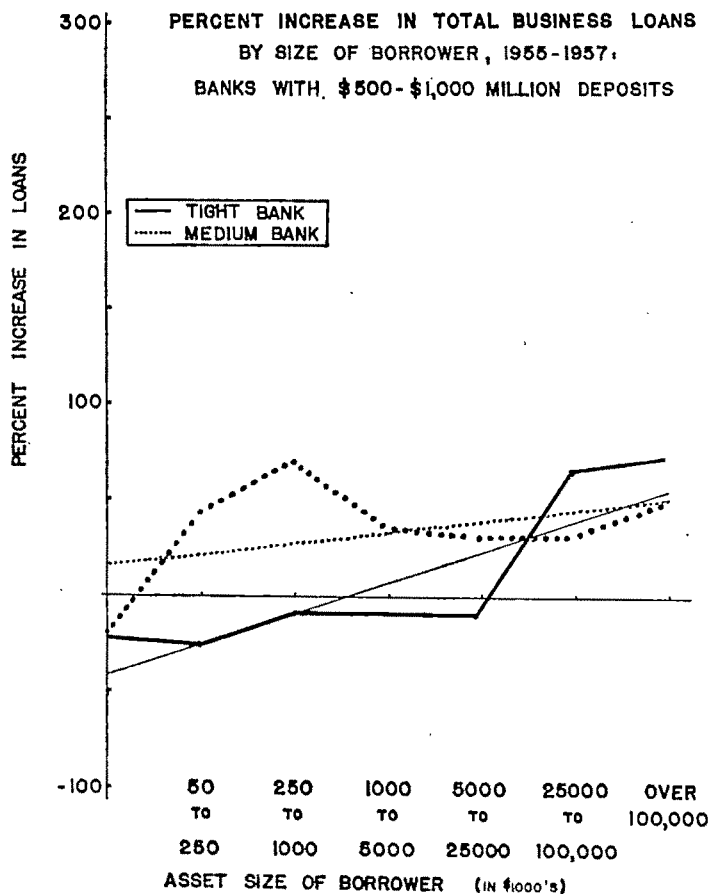


FIGURE 3

in different industries and at banks of different sizes. No clear patterns emerge as between different industries at all banks combined or at banks of different sizes separately. This is not surprising, since there is no a priori reason to expect such size-of-borrower differences as between different industries.²⁰

²⁰ Basic data showing separately each industry's borrowing from each bank size-group are available for inspection in our files.

In summary, the size-of-borrower data reject the hypothesis that tight money led banks to discriminate substantially against small borrowers in favor of large. Only at banks in the \$500-\$1,000 million deposit size-group are the data consistent with this hypothesis of substantial discrimination; for the banking system as a whole and for all other size-groups of banks, either the differential behavior at tight and

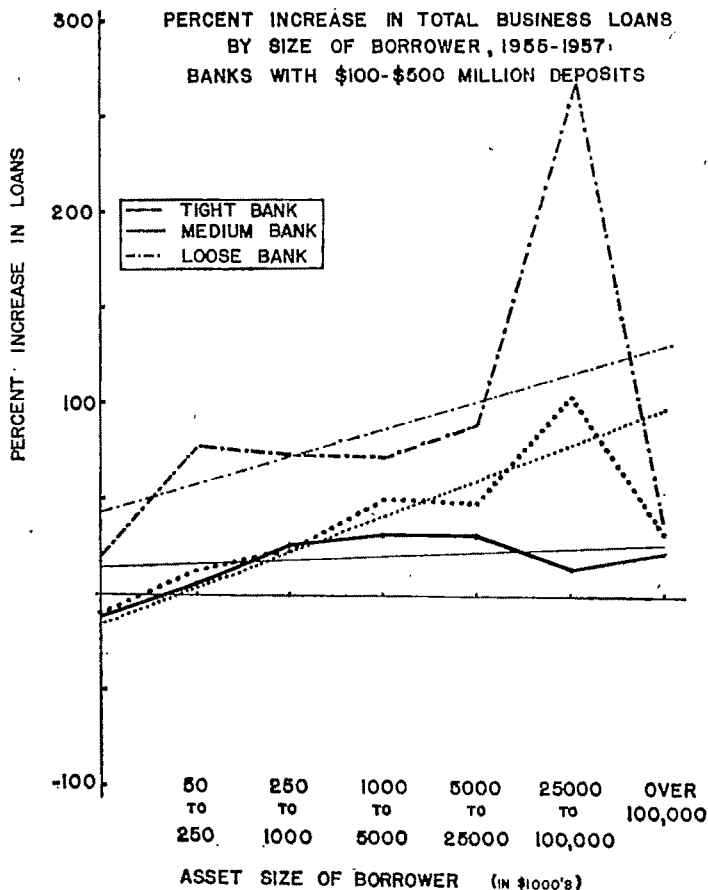


FIGURE 4

loose banks was slight or it was in favor of small borrowers. Crudely, the data suggest that bankers tended under tight money, as would have been expected, to meet their strongest credit-worthy loan demands while in the main adhering to their regular criteria of credit-worthiness; and that in so far as limited discrimination occurred on other bases, bankers may well have tended to care especially for their best customers—at large banks especially larger businesses and at small

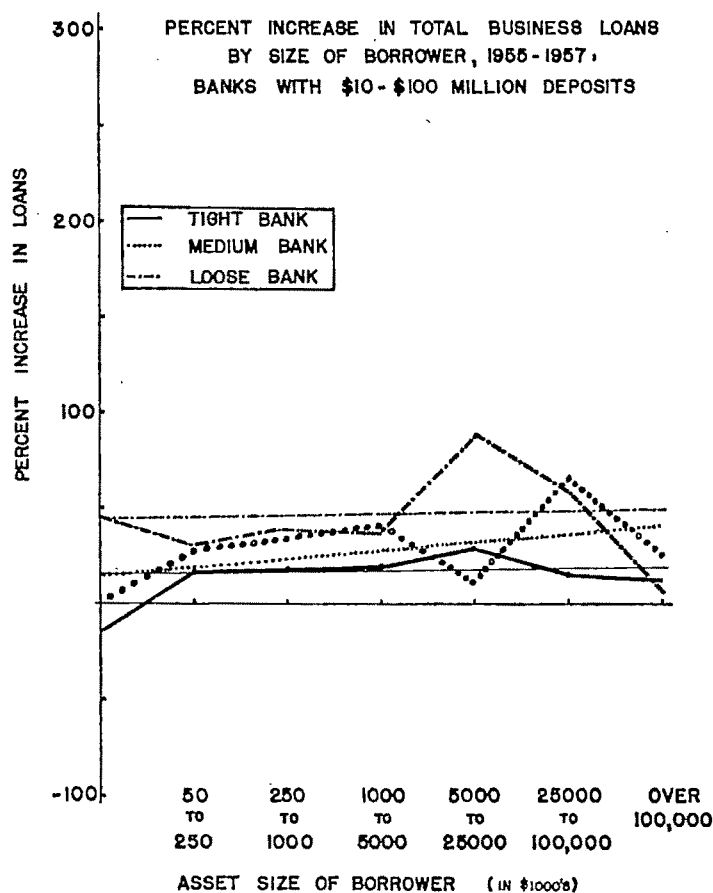


FIGURE 5

banks especially smaller businesses.²¹ But this last sentence is based more on the "feel" of the data and on interviews with bankers than on rigorous analysis of the data; and the central fact of lack of substan-

²¹ Nearly all bankers, however, deny that they discriminate against small borrowers *per se* but instead base credit extension on the credit-worthiness and general "goodness" of the applicant, regardless of size. [See 11, pp. 401-2]. Bankers we have interviewed are surprisingly consistent in holding that the most important criterion of a "good" customer is the size of deposit balance he will maintain over the long run, assuming, of course, that he meets the traditional standards of credit-worthiness on individual loans, as most reasonably good customers do.

Some large branch bankers emphasize that lending procedures clearly lead to discrimination *in favor of* small business. Under tight money all large loans must be reviewed by the central loan committee, which is highly sensitive to the scarcity of funds for lending. But branch managers are often left substantially free, under decentralization policies, to make all loans that seem good without central loan committee review as long as the loan is below some prescribed size, for example \$25,000.

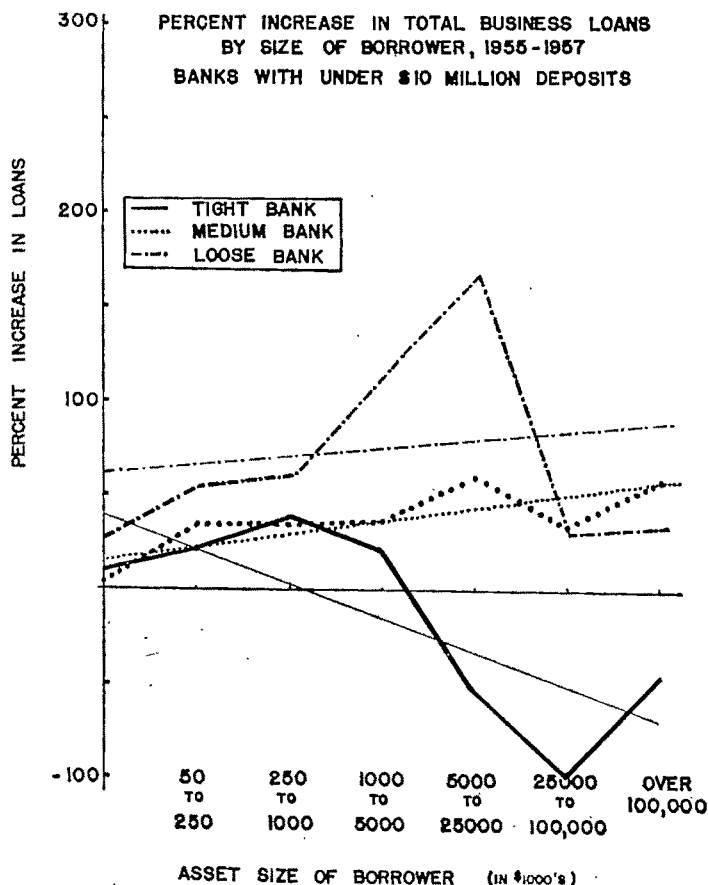


FIGURE 6

tial lender discrimination by size of borrower is the one that emerges from the data.

It is useful to ask directly: Who were the marginal borrowers turned away under tight money—large or small businesses? At loose banks, and at small banks as a class, apparently neither large nor small credit-worthy borrowers were turned away to any substantial extent. Remember the evidence on page 59 that these banks gained more deposits (lendable funds) than they used in extending new credit over the period. In the tight group, large banks and hence large borrowers predominated. Thus, although tight banks probably squeezed both large and small borrowers somewhat, for the banking system as a whole a larger proportion of small than of large borrowers apparently escaped completely the pressure of tight money on their bank borrowing.

A more complete picture of tight money's effects on borrowers of

different sizes would need to take into account lenders other than commercial banks. During the 1955-57 period, small-business borrowing in total rose much more rapidly than is indicated by the commercial bank data, since big firms extended a large amount of additional trade credit to smaller firms. These credits arose mainly through the extension of open-book accounts, but also through other forms of credit from vendors to buyers. Two major studies agree that the rapid rise in trade credit to small from large businesses accounted for a very large sum. This fact, although outside the immediate purview of the present study, adds further weight to the refutation of the claim that tight money discriminated especially against small-business borrowers.²²

IV. *Business of Borrower and the Investment Boom*

Table 6 shows, for all banks combined and for tight, medium, and loose banks separately, the percentage increase in loans to borrowers in different industry groups. The first column indicates that for all banks combined loans to metal and metal products, petroleum-coal-chemicals, and transportation-public utilities companies showed the largest increases. Indeed, nearly half the total increase in loans to all business borrowers over the two years was accounted for by these three groups. At the other extreme sales finance, construction, real estate, and textiles companies showed the smallest increases. In general, loans to manufacturing firms increased more than to other types of business borrowers.²³

It is striking that the rapid growth of loans in the metals, petroleum-rubber-chemicals, and public utilities industry groups was in precisely those areas where the 1955-57 investment boom was strongest. In a tight-money period, banks generally increased their loans most to those borrowers who had the strongest loan demands, and in general to those whose business was best and expanding most rapidly. The data thus generally support the proposition that loans were expanded most where loan demand grew most rapidly. For example, within the construction industry loans rose rapidly to large construction firms, whose business rose rapidly during the period, but only slightly to small construction borrowers concerned largely with residential construction, which declined over the period.

Broadly speaking, tight banks under the pinch of tight money used available funds to expand loans where—in manufacturing and public

²² See especially Allan H. Meltzer [3] and [11, pp. 363 and 482].

²³ The data in Table 6 for all business loans do not agree precisely with those in Table 2 for commercial and industrial loans as to relative increases at tight, medium and loose banks. Part of the difference is due to the inclusion of real estate loans to businesses in the "business loan" figures but not in the "commercial and industrial loan" figures. There may be other factors involved, but if so we do know what they are.

TABLE 6—PER CENT INCREASE IN BUSINESS LOANS, OCTOBER 1955–OCTOBER 1957

Business of Borrower	Per Cent Increase At:				Relative Increase, With Per Cent Increase At Loose Banks = 100		
	All Banks (1)	Loose Banks (2)	Medium Banks (3)	Tight Banks (4)	Loose Banks (5)	Medium Banks (6)	Tight Banks (7)
All borrowers	52	52	46	56	100	88	108
All manufacturing and mining:	66	71	56	76	100	79	107
Food, liquor and tobacco	48	8	62	46	100	775	575
Textiles, apparel, etc.	31	1	4	53	100	400	5300
Metal and metal products	98	132	71	118	100	54	89
Petroleum, chemicals, etc.	67	42	49	82	100	117	195
Other manufacturing and mining	59	35	71	53	100	203	151
Trade							
Wholesale	43	65	19	75	100	29	115
Commodity dealers	36	37	12	51	100	32	138
Retail	48	62	45	45	100	73	73
Sales finance companies	27	41	20	28	100	49	68
Public utilities, transportation, etc.	89	23	56	126	100	243	548
Construction	29	33	40	14	100	121	42
Real estate	33	81	41	15	100	51	19
Services	40	56	52	16	100	93	29

utilities—banks as a whole expanded loans most. But the shift of tight banks away from other businesses to these groups was more pronounced than at loose banks. This is shown especially by column 7, which indicates the big relative increases at tight banks in loans to most manufacturing subgroups and to public utilities as compared with loose banks. Conversely, the tight banks showed very small relative increases in loans to construction, real estate, services, and sales finance companies. Again, the evidence is consistent with the proposition that loans rose most where the borrower demand was greatest. The main apparent exceptions are textiles, and food-liquor-tobacco firms, where very large relative increases are shown by column 7 although their aggregate investment growth was moderate. These are both cases where very small percentage increases were reported by loose banks, so even moderate increases at tight banks appear as very large relative increases.

It may be surprising that tight banks increased their commercial and industrial loans more than loose banks over the period, in total, for most of the manufacturing groups, for wholesale trade and commodity dealers, and for public utilities. This was accounted for by the very

large banks—those with deposits over \$1 billion—none of which fell in the loose group. At all other tight banks, business loans increased substantially less than at loose banks. Data comparing the lending patterns of tight, medium and loose banks separately for banks in five size classes are presented in Table 7, which is comparable to Table 6 above.

The Table 7 breakdown by size of bank shows substantial diversity; but no pattern of differences in lending behavior at banks of different sizes. This may not be surprising, since there is no a priori reason to suppose that banks of different sizes would react differently in a systematic way to loan demands from different industries. In each of

TABLE 7—PERCENTAGE INCREASE IN BUSINESS LOANS AT DIFFERENT SIZE BANKS, OCTOBER 1955 TO OCTOBER 1957^a

Size of Bank (Deposits) ^b	Business of Borrower														
	All Borrowers	Manufacturing & Mining						Wholesale trade	Commodity dealers	Retail trade	Sales finance Cos.	Public Utilities, etc.	Construction	Real estate	Services
		All	Food, etc.	Textiles, etc.	Metals	Petroleum etc.	Other								
Over \$1 billion: ^c															
% Increase in loans at:															
Medium banks	79	93	119	- 25	77	88	210	-13	- 2	45	138	131	38	141	90
Tight banks	105	121	81	76	200	118	83	101	74	91	76	193	30	35	37
Relative increase at:															
Medium banks	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tight banks	133	130	68	504	260	134	40	977	3900	198	55	147	79	25	41
\$500-\$1,000 million: ^c															
% Increase in loans at:															
Medium banks	41	54	51	- 8	81	36	59	34	93	71	-21	25	92	- 6	57
Tight banks	14	13	27	- 18	15	-30	50	18	380	11	-25	91	-19	- 6	18
Relative increase at:															
Medium banks	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Tight banks	34	22	53	-225	19	-83	85	53	409	15	81	364	-21	100	32
\$100-\$500 million:															
% Increase in loans at:															
Loose banks	75	89	20	- 23	312	56	23	126	21	132	- 8	-10	65	189	48
Medium banks	39	45	52	17	78	32	27	37	-19	45	16	22	58	39	60
Tight banks	27	27	2	32	89	40	26	65	12	35	20	14	2	8	- 2
Relative increase at:															
Loose banks	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Medium banks	52	51	260	274	25	57	117	29	-90	34	733	420	89	23	104
Tight banks	29	30	10	339	13	71	113	52	57	27	597	340	3	6	- 4
\$10-\$100 million:															
% Increase in loans at:															
Loose banks	37	24	- 2	24	19	32	48	29	52	37	121	48	22	53	54
Medium banks	29	23	8	16	33	21	32	31	19	42	6	39	11	30	38
Tight banks	16	22	17	21	37	26	6	27	-10	40	-24	26	25	11	8
Relative increase at:															
Loose banks	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Medium banks	78	92	609	67	174	66	46	107	37	114	5	81	50	55	70
Tight banks	43	92	1050	88	195	88	13	93	-19	108	-20	54	114	20	15
Under \$10 million:															
% Increase in loans at:															
Loose banks	47	19	-14	8	10	41	35	54	30	42	41	116	31	63	64
Medium banks	24	11	- 8	6	19	55	8	31	54	29	7	49	15	23	27
Tight banks	15	1	24	- 43	-17	40	17	21	35	15	- 7	108	45	2	11
Relative increase at:															
Loose banks	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Medium banks	51	58	143	75	190	134	14	57	180	69	17	42	48	35	42
Tight banks	32	6	371	-537	-170	98	49	39	117	36	+17	93	145	3	17

^a For corresponding all-bank data, see text Table 5.

^b Deposits as of October 1955.

^c No banks in the Over \$1 billion and the \$500-\$1,000 million deposit classes fell in the loose group.

the industry groups, small as well as large firms are represented, although in different proportions at different size-groups of banks.

In summary, these data suggest that increasingly tight money during the 1955-57 period was reflected in significantly different increases of loans for different industry groups; and that especially at tight banks, as well as for the banking system as a whole, the loan expansion was greatest to those industries which were expanding most rapidly in terms of plant and equipment expenditure, inventory accumulation, and general level of activity. Thus, broadly speaking, banks increased their loans most where the credit-worthy loan demand was greatest. This does not, of course, say that the rapidly expanding industries necessarily received the most credit *relative to* their loan demands.²⁴

But it was not true that bank loans uniformly expanded most rapidly to those industries whose business was growing most rapidly. For example, sales finance companies, whose business expanded rapidly over the period, obtained only a modest increase in bank loans. This was probably in part because they had fairly ready access to the money market through other channels. But it also apparently was because banks generally do not consider sales finance companies highly preferred customers, since finance companies generally do not promise large long-run deposit balances to the extent that many manufacturing and commercial borrowers do.

V. Interest Rates

Small businesses generally pay higher interest rates at banks than do large businesses, primarily reflecting differences in size of loan. Small businesses usually borrow small amounts, and investigation charges, servicing charges, and related expenses bulk relatively much larger than on the large loans customarily obtained by large businesses. Large businesses often pay lower interest rates on comparable size loans than do small businesses, but the differences are small and probably reflect mainly differences in risk and in loan-administration costs.

Table 8 shows interest rates paid by borrowers of different sizes in 1955, in 1957, and the net increase over the two-year period. In both 1955 and 1957, the average interest rate paid varied inversely with the size of borrower. But as interest rates rose with tight money over the two-year period, rates to large borrowers were increased considerably more than rates to small borrowers. Over the two years, the spread between average rates to the largest and smallest borrowers declined

²⁴ The Federal Reserve interview study of bankers in 1957 found "almost complete absence" of any indication of bank policy changes as to the type of industry most desirable to accommodate. Decisions continued to be made on prevailing criteria, though the actual loan distribution shifted with the shifting positions of potential borrowers, See [11, p. 436].

from 2.5 to 2.1 per cent. While the average rate on all new loans rose from 4.2 to 5 per cent, that on loans to large borrowers rose nearly twice as much absolutely, and even more relatively, as that on loans to small borrowers. During the period, moreover, bank requirements that borrowers maintain compensating balances also became more widespread. Since these requirements apply primarily to large borrowers²⁵ it is probable that differences in effective interest rates narrowed even more than the data in Table 8 indicate.

TABLE 8—INTEREST RATES ON BUSINESS LOANS, BY SIZE OF BORROWER*

Asset Size of Borrower (000's omitted)	Average Interest Rate (per cent per annum)		
	1955	1957	Absolute Increase
All borrowers	4.2	5.0	.8
Under \$50	5.8	6.5	.7
\$50 to \$250	5.1	5.7	.6
\$250 to \$1,000	4.6	5.4	.8
\$1,000 to \$5,000	4.1	5.1	1.0
\$5,000 to \$25,000	3.7	4.8	1.1
\$25,000 to \$100,000	3.4	4.5	1.1
\$100,000 and over	3.3	4.4	1.1

* Size of borrower as of October 1955. Rates are average rates charged by reporting banks over the July–October period for 1955 and 1957. More detailed data, for loans at different size banks, are presented by the Federal Reserve in [11, pp. 388–89].

This greater increase in rates to large borrowers probably reflected, at least in part, the fact that small borrowers by 1955 were already paying rates near the customary or legal upper limits for nonconsumer loans at many banks. These legal limits are as low as 6 per cent in eleven states, including New York, New Jersey and Pennsylvania, and range up to 15 per cent in others. Thus as interest rates rose, rates to large borrowers could be increased without violating the customary or legal upper limit, while rates to small borrowers could be raised little or not at all. In any case, for the banking system as a whole, it is clear that interest rates to small borrowers rose less than those to large borrowers. In the aggregate tight money did not lead to discrimination in interest costs against small borrowers.

To what extent did tight banks, under the pinch of tight money, use higher interest rates as a device for discouraging especially particular classes of borrowers? Figure 7 shows the change in the distribution of business loans made at different interest rates by tight, medium and loose banks over the 1955–57 period.

The average interest rate charged rose at all three classes of banks.

²⁵ See [11, p. 433].

Loans made at less than 4 per cent declined at all classes, as the rate structure moved up. The largest percentage increase at both tight and medium banks was in the 4.5-4.9 per cent range, while that for loose banks was in the 5-5.9 per cent range. The apparent differences between tight and loose banks reflect primarily the larger proportion of large banks (and large loans) in the tight group, where rates in the 4.5-5 per cent range represented a large increase for large borrowers. At tight banks, nearly half the total loan volume was in loans of \$1 million or more, as compared to less than 5 per cent at loose banks.

PER CENT INCREASE IN BUSINESS LOANS
MADE AT DIFFERENT INTEREST RATES: 1955 TO 1957

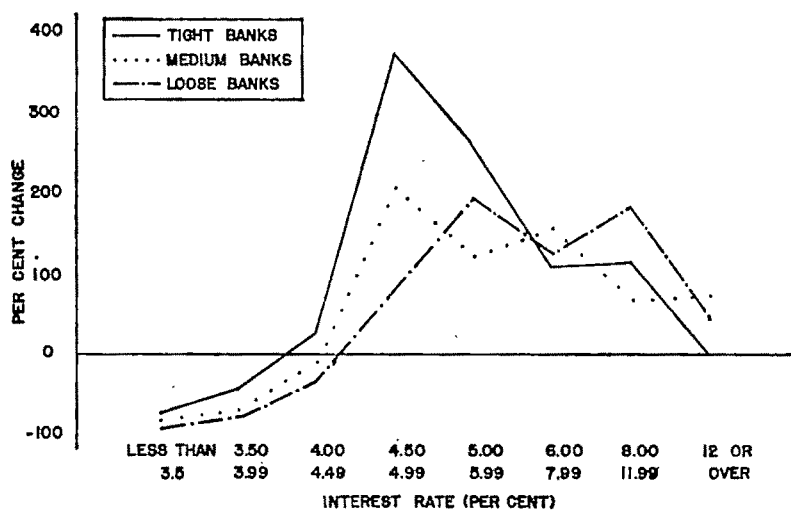


FIGURE 7

By 1957, two-thirds of these larger loans at tight banks were made at 4 or 4.5 per cent, while in 1955 nearly two-thirds were made at rates below 3.5 per cent.²⁶

Data showing separately changes in loans made at different interest rates on loans of different sizes at tight, medium and loose banks indicate that tight, medium and loose banks raised interest rates over the period by similar amounts for loans of the same size—though with some wide differences that appear to be random.²⁷

In summary, therefore, there is little evidence of much differential

²⁶ Most borrowers pay about the same rate of interest on their loans, regardless of the size of the bank from which they borrow. See [11, p. 389].

²⁷ Charts comparable to Figure 7 have been prepared for loans in six different size groups. Copies will be provided on request.

interest rate behavior at tight and loose banks during the period of increasingly tight money. This finding is consistent with the hypothesis that the pattern of interest rates at banks is set by general market forces, and that banks generally follow a policy of price leadership in establishing interest rates, rather than using them as a device to discriminate among borrowers. The hypothesis that tight money raised interest costs especially to small borrowers is clearly rejected by the data.

VI. Conclusion

What is the significance of these findings for the use of restrictive monetary policy in the future? Tight money in 1955-57 apparently led those commercial banks which felt its impact to alter their asset portfolios significantly; they shifted to obtain funds to increase loans to profitable borrowers, especially business firms, even at the cost of liquidating government securities on a declining market. Discrimination amongst borrowers was apparently largely on traditional banking standards of credit-worthiness and goodness of borrowers, with differing changes in loans to various borrower groups reflecting primarily differences in loan demands, rather than discrimination by lenders on other grounds, once standards of credit-worthiness were met. Widespread criticisms of tight money as unfairly discriminating against small borrowers, both in availability of loans and interest costs, are not supported by the data.

On the other hand, the fact that increasingly tight banks continued to increase loans to good business customers, whose demand for money reflected partly heavy investment outlays and inventory carrying costs, meant that tight money did not act to deter especially these prime movers in the investment boom. Thus, although tight money in 1955-57 may have led to little "unfair" discrimination against particular borrower groups, it did permit funds to go extensively to the same borrowers who would have obtained them in the absence of tight money. Whether the marginal borrowers shut out by tight money would have contributed significantly to either undesirable investment or inflation cannot be told from these data. Probably at least as much (more, on the objective evidence) of the marginal credit shut off was to large as to small firms, but no comparable generalization as to industry is possible from these data.²⁸

Over all, tight money in 1955-57 appears not to have changed greatly the allocation of bank credit among major classes of business borrow-

²⁸ Unfortunately, the Federal Reserve obtained separate information on loans to new businesses only in the 1957 survey. Thus it was impossible to test the hypothesis that tight money leads banks to discriminate against new businesses. For some evidence on the point, see [11, pp. 390 ff.].

ers from what it would have been with looser money, certainly not by size of firm and only moderately by industry—partly because money was not tight enough to limit seriously loans to credit-worthy customers at a substantial proportion of all banks. Tight money's main effect was apparently to hold down the total volume of credit while inducing credit rationing at tight banks mainly in response to relative strength of demand among "good" bank customers. Whether one evaluates this conclusion as strengthening or weakening the case for restrictive monetary policy may depend largely on his taste for direct controls as against market forces. Tight money helped to restrict total spending and keep the price level down while doing relatively little directly to reallocate resources—the traditional objective of general monetary policy. It apparently did not especially check the industries at the core of the investment boom.

REFERENCES

1. J. K. GALBRAITH, "Market Structure and Stabilization Policy," *Rev. Econ. and Stat.*, May 1957, 39, 124-33.
2. A. H. MELTZER, "A Comment on Market Structure and Stabilization Policy," *Rev. Econ. Stat.*, Nov. 1958, 40, 413-15.
3. ———, "Mercantile Credit, Monetary Policy, and Size of Firms," *Rev. Econ. Stat.*, Nov. 1960, 42, 429-37.
4. W. L. SMITH, "Monetary Policy and Debt Management," in *Employment, Growth, and Price Levels*, Staff report prepared for the Joint Economic Committee, 86th Cong. 1st sess., Dec. 24, 1959. Washington 1959.
5. "Bank Credit and Money," *Fed. Res. Bull.*, Feb. 1956, 42, 97-105.
6. ———, *Fed. Res. Bull.*, July 1957, 43, 753-58.
7. Board of Governors of the Federal Reserve System, *Annual Report*, 1955, 1956 and 1957.
8. *Business Week*, Oct. 15, 1955, p. 200 and Sept. 21, 1957, p. 26.
9. *Federal Reserve Bulletin*, Apr. 1956, 42, 338-39.
10. ———, Apr. 1958, 44, 410-11.
11. *Financing Small Business*. Report to the Committees on Banking and Currency and the Select Committees on Banking and Currency, 85th Cong., 2nd sess., by the Federal Reserve System. Parts 1 and 2. Washington 1958.
12. *New York Times*, Nov. 11, 1955 and May 17, 1957.

VARIABILITY IN EARNINGS-PRICE RATIOS OF CORPORATE EQUITIES

By HASKEL BENISHAY*

This study proposes to examine empirically the determinants of the differences in rates of return on corporate equities. The rate of return employed is derived for each equity by dividing the weighted average of annual earnings of nine consecutive years by the market value of the corresponding equity in the ninth year, and will be referred to as the measured rate of return. This empirically derived rate is designed to represent the theoretical ratio of expected income to the market value of the equity, where expected income is the mathematical expectation (mean) of a statistical distribution whose values are earnings expected in future years.

We advance the hypothesis that the measured rate of return of corporate equities is a function of: (1) the trend in earnings; (2) the trend in the market value of the equity (price); (3) the pay-out ratio: the ratio of dividends to earnings; (4) the expected stability of the future income stream; (5) expected stability of the equity value; (6) the size of the firm and the liquidity of its shares, both represented by the market value of the equity; and (7) the debt-equity ratio. Among the independent variables the first three are "corrective": they are expected to remove the errors obstructing a valid measurement of the theoretical concept of a rate of return on equity capital. The remainder are selected to measure the differential "risk" or "desirability" of holding corporate equities, and as such are explanative.

Our method of investigation consists of tracing the relationship between each of the independent variables and the rate of return on equity while holding other independent variables constant in a multiple regression analysis.

I. The Measured Rate of Return and the Independent Variables

This section will explain why the selected independent variables may be expected to account for differences in the measured rates of return on corporate equities, and will give the empirical definitions of the

*The author is assistant professor of economics and finance at Roosevelt University.

This is a part of a study which was conducted in the public finance workshop of the University of Chicago [1]. I am indebted to A. Harberger, L. Fisher, M. Bailey, K. Christ, J. Rothenberg, Z. Griliches, and H. Roberts for useful and constructive criticism.

variables employed in this study. The variables are specified for the firm as a whole, not for a single share.

A. *The Dependent Variable*

The Measured Rate of Return: y . The numerator is a weighted average of earnings after taxes for the cross-section year and the 8 preceding years. This weighted average may be expressed in two ways: the sum of the cross-section year's earnings plus the arithmetic mean earnings of the 9 years, including the cross-section year, divided by 2; or a weighted average such that 10/18 of the weight is given to the cross-section year, and 1/18 of the weight to each of the 8 preceding years.

The equity measure in the denominator of the measured rate is the arithmetic mean of the high and low values of the equity outstanding in the cross-section year.¹

B. *The "Correctors"*

1. *Growth in Earnings: X_1 .* The numerator of the measured rate of return is defined as a weighted average of actual past income, without being adjusted for trend in past income; consequently it may diverge downwards from expected income when past income growth has been high, and upwards when past growth has been low. Inclusion of the trend in past income as an independent variable may allow expected income to be more closely estimated if the market utilizes projections of past income trends for the determination of expected income.

The trend in earnings, X_1 , is computed by dividing the coefficient of the simple linear regression of earnings after taxes on time, for the 9 years preceding and including the cross-section year, by the arithmetic mean earnings of the same period (this regression is used later to compute X_4). The division by mean earnings, which is equivalent to a deflation by size, is performed to obtain a measure independent of the dimensions of the firm: a measure of a rate of growth uncorrelated with the size of the firm rather than one of absolute growth.

2. *Growth in Equity Value: X_2 .* The incorporation into the model of past trend in the value of the equity may correct for the absence of a recent re-evaluation of expected income in the measured rate of return. The measure of earnings in the numerator of the measured rate of return may fail to reflect an upward change in expected income, while the market value of the equity in the denominator will reflect it immediately. Consequently the measured rate may be smaller than the

¹ The numerator is a crude compromise between assigning equal weights to each of the nine years, and assigning all the weight to the last year. The next obvious improvement would be to find a more appropriate system of weights.

true rate when expected income has risen. A symmetrical argument holds when expected income has declined. The percentage change in equity value, which generally reflects the percentage change in expected income, could be an indication of the extent of the lag with which measured earnings reflect expected income. The larger this percentage change is, per unit of time, the less likely is the empirical representation of earnings to keep up with expected income (the larger will be the difference between true and measured earnings) and the greater will be the negative correlation between growth in equity value and the measured rate of return.

The measure of X_2 , trend in equity value, is computed in a manner parallel to the computation of X_1 . It is the coefficient of the linear regression (used in computing X_1 , stability of equity) of the annual highs and lows of the equity values in 9 consecutive years preceding and including the cross-section year, divided by the arithmetic mean of these same equity values. Here again the division by average equity provides a measure that is comparable cross-sectionally and free of the association between growth and size of firm. This measure denotes past rate of growth in equity or the yearly capital gain per average unit value of equity-holding for the period.

3. *The Pay-out Ratio: X_3 , Dividends/Earnings.* A notion seems to prevail in the financial literature, that because investors prefer distribution to retention of earnings, the pay-out ratio and the rate of return are negatively correlated [3, p. 341]. Yet since, on the average, retained earnings are reflected in stock prices and consequently can be realized through a sale, there seems to be no a priori reason for preferring dividend income to capital gains income. Moreover, because of the capital gains tax, the argument may go the other way: retention may be preferred to distribution.²

A more reasonable explanation for a negative correlation between the pay-out ratio and the measured rate of return may be provided by examination of the effect of errors in the measurement of earnings.³ If measured earnings are an overestimate and dividends are a stable proportion of expected income, the rate of return is "too high" and the pay-out ratio "too low." This will introduce into the relationship a neg-

²This would be true only if the rate of return on invested retained earnings was not sufficiently lower (in equilibrium) to take away the capital-gains tax advantage, so as to make the after-tax capital gains equal to the dividends (after personal income tax) if earnings had been paid out in dividends.

³Two types of error are possible: (a) a difference between the expectation of the population of annual book earnings and expected income, due either to a consistent accounting bias in the measurement of earnings or to the fact that measured earnings, however unbiased *ex post*, may lag behind expected income when the latter has changed abruptly; (2) the difference between earnings measured on the basis of a limited sample (and containing therefore a transitory element) and their population mean.

ative spurious correlation.⁴ The introduction of the pay-out ratio as an independent variable in a multiple regression equation is intended to correct for the errors.⁵

The measure employed for X_3 is the arithmetic mean of 3 consecutive annual observations of (dividends paid \times 100/earnings), the last observation being in the cross-section year.

C. *The Risk Variables*

1. *Stability of Income: X_4 .* (a) For any given level of the firm's capital structure, the larger the variance of the distribution of expected earnings, the larger is the probability of failure. (b) Also, for any level of the capital structure, the larger is this variance the greater is the cost or inconvenience incurred by the investor in maintaining a stable level of expenditure, since borrowing or the carrying of cash balances becomes necessary to counteract income variability. For both reasons, a high stability of income is a desirable property and will tend to produce a low price-earnings ratio.

The measure used for X_4 is a ratio, the numerator of which is the arithmetic mean of earning after taxes, in 9 consecutive years, ending in the cross-section year; its denominator is the standard deviation around the regression of these same 9 observations, on time. If time be t , earnings y , m the sample moment, and n the number of observations, then the denominator will be expressed symbolically as:

$$\sqrt{\frac{m_{yy} - (m_y)^2/m_{tt}}{n - 2}}$$

The whole ratio is a reciprocal of what is essentially a coefficient of variation. The use of mean income in the numerator is designed to produce a relative measure of stability uncorrelated with the size of the firm. If mean income were not put in the numerator, the reciprocal of the standard deviation would be negatively correlated with the size of the firm, since the standard deviation is normally an increasing function of size.

2. *Stability of Equity Value: X_5 .* The usual contention is that, since

⁴A similar argument was developed by F. Modigliani and M. H. Miller, in their reply to David Durand [5]. What is described here as a negative correlation due to errors in the measurement of earnings was designated by Modigliani and Miller as a correlation due to the "informational content of dividends."

⁵The above analysis begs the question of whether maximizing stockholder return is really the sole goal of the management of large firms. The management may consistently retain earnings for purposes of self-aggrandizement, not necessarily for profit maximization, in which case retention would be an undesirable characteristic. It also ignores the possibility that insiders may be consistently overoptimistic in regard to new ventures, in which case again retention would be undesirable. The reason for these two omissions is the belief that, although logically admissible, they are realistically improbable.

the precautionary motive for holding a share of stock is dominant, price variability is shunned. When they think about the possibility of being impelled to sell in an emergency, stockholders are presumed to be more averse to a given likelihood of a low price than heartened by an equal likelihood of a high one.

A priori, an opposite hypothesis is also tenable. The speculative rather than the precautionary motive is dominant; therefore equity variability is sought. Stockholders are more encouraged by a likelihood of a high price than discouraged by an equal likelihood of a low one. They prefer stocks with variable prices to stocks with stable ones.

The measure used for X_5 is a ratio. Its numerator is the arithmetic mean of 18 market observations of the firm's equity value: the high and the low for each of 9 consecutive years, ending in the cross-section year. Its denominator is the standard deviation around the linear regression of these same 18 equity values on time. If time be t , equity y , m the sample moment, and n the sample size, this denominator will be written as:

$$\sqrt{\frac{m_{yy} - (m_{yt}^2/m_{tt})}{n - 2}}$$

(where $n = 18$, distributed 2 per year).

3. *Size* (market value of the equity): X_6 . This is intended as a measure of both liquidity and size.

(a) Barring radical changes in expectations, larger firms tend to have a higher volume of trading, thereby a more perfect market. Consequently the price at which their shares are sold or bought is less likely to be adversely affected by the transaction of an individual investor. This becomes especially desirable for institutional and other large holders who deal in large blocks.

(b) A larger firm is known about more than in proportion to its size. Therefore the less-informed segments of the market will tend to specialize in holding shares of large corporations. Consequently, what is equivalent to a once and for all shift in demand in favor of larger firms' shares will become a permanent pattern of the market, resulting in these shares' prices being relatively higher.

(c) A larger firm is often considered safer simply because its size represents to many investors better protection against adverse conditions and a smaller probability of failure.

All three arguments suggest that the larger the firm is, the more desirable are its shares. The measure used for X_6 is the arithmetic mean of the high and low values of the equity outstanding in the cross-section year.

4. *Debt-Equity Ratio*: X_7 . (a) The more heavily a firm's capital

structure is weighted with debt, beyond the optimum, the higher the risk of default. This statement refers to the movement of a single firm along a schedule relating the debt-equity ratio to riskiness. (b) On the other hand, if a firm is at, or approximately at, its optimum debt-equity ratio, the debt-equity ratio is a decreasing function of risk. This relationship clearly relates to the equilibrium pattern that will be attained by a cross-section of firms, such that the lower is a firm's riskiness the higher is its optimum debt-equity ratio. Thus the debt-equity ratio may represent either risk or safety, depending on the context in which it is used. Consequently it becomes important to ascertain whether the debt-equity ratio employed in this study in effect reflects deviations from its optimal position in each firm, or instead is a measure of these optimal points themselves.

If by holding size and income stability constant, as will be done in the regressions, we consequently hold fixed the main determinants of the debt-equity ratio, namely variables to which the debt-equity ratio is adjusted by management in an attempt to maintain optimal capitalization, then X_7 will come to represent deviations from equilibrium. In such a case we should expect a positive sign for the debt-equity coefficient (i.e., the higher the debt, the larger the risk of default, the less valuable the equity and the larger the rate of return). If the debt-equity ratio is mainly a function of other risk variables not included in the regression (or if it depends on the level of profit expectations, an increase in which may motivate a debt-financed expansion for the purpose of leverage gains), then the debt-equity ratio will reflect a desirable characteristic, and its coefficient will have a negative sign. The measure used for X_7 is the book value of debt at the end of the cross-sectional year divided by X_6 .

II. Empirical Results

This study consists of a comparison of 56 companies in the four years, 1954, 1955, 1956, and 1957, with each firm constituting an observation in a cross-sectional multiple regression analysis.

The principal sources of data were *Moody's Industrial Manual* [9] and *Moody's Handbook of Widely Held Common Stocks* [8]. Industrials with comprehensive and comparable income statements for nine consecutive years preceding and including the cross-section year were chosen. Use was also made of the *Bank and Quotation Record* and the *Commercial and Financial Chronicle*. *Moody's Handbook of Widely Held Common Stocks* however, provided most of the raw data.

The firms were chosen with the additional criterion of having common but no preferred stocks.⁶ This step was necessary because of ob-

⁶The firms in the four cross-sections were all the industrial firms in *Moody's Handbook*

stacles involved in an unambiguous computation of the stability of equity value, growth in equity value, and the pay-out ratio, when both common and preferred equities are outstanding. In the case of these three variables there is no composite measure for which it is possible to assign unequivocally an appropriate weight to the separate measurement of the variable for each of the two types of equity. To illustrate: the pay-out ratios for the two equities are usually different, whereupon a problem of weighting arises in deciding how to combine them into a single measure.

Our model was tested by running cross-sectional linear regressions, in which logarithmic values were used for y , X_3 , X_4 , X_5 , and X_6 , and actual values for the other variables. The variables X_1 , X_2 , X_4 , and X_5 were computed for the 1954 and 1956 cross-sections; their 1954 computation was used in both 1954 and 1955 regressions, and their 1956 computation was applied to both 1956 and 1957 regressions.⁷

The results are now matched against the theoretical contentions. For convenience, we shall refer to a partial regression coefficient simply as a coefficient and to the changes in the t -ratios of these partial regression coefficients simply as changes in the coefficients. We start by noting the comparative regression performance of two correctors, growth in earnings and growth in equity, and then choose for further use one of the two which a study of the regressions reveals to be the more successful corrector. Our criterion of success is mainly the extent of the negative relation between the growth measure and the measured rate of return: the stronger is this relation, the more successful is the growth measure. We make this choice because we believe that entering both growth variables in the same regression would be illegitimate.

Certainly the inclusion of both growth variables will enable us to observe the relationship of each with the measured rate of return while the other is held constant (which is a consequence of multiple regression), but will also introduce a positive spurious correlation between growth in earnings and rate of return as well as a negative one between growth in equity value and rate of return. *Ceteris paribus*, when growth in equity value is held constant, a higher growth in measured earnings is necessarily associated with a higher measured rate of return. Thus, the inclusion of both growth variables may enable this tautological and positive relation to counteract or even reverse the expected negative regression relation between the measured rate of return and growth in earnings. Also, *ceteris paribus*, when growth in

of *Widely Held Common Stocks* that fit our requirements and had complete and unambiguous data either in the *Handbook* or in *Moody's Industrial Manual*.

⁷Nine more regressions were run for each year to investigate the effect of dropping, adding, and substituting variables [1, pp. 65-67].

measured earnings is held constant, a higher growth in equity value must be related to a low measured rate of return. Thus the inclusion of both growth variables may enable this obvious negative association to superfluously increase the expected negative regression relation between growth in equity value and the rate of return.

In Table 1 we present three regressions in order to compare the performance of the two growth variables and choose the better corrector. The first, (1), contains measures for all the independent variables of the model, including the two growth measures. The second, (2), includes measures for all but growth in earnings. The third, (3), includes measures for all but equity growth.

Growth in Earnings: (X_1). Whether X_1 will emerge in the regressions with a significant negative sign depends on the extent of the positive correlation between growth in earnings in two adjacent periods (or more specifically upon the extent that the market extrapolates past growth trends in earnings). If this correlation be high then a measure of past growth in earnings may be a good predictor of future growth in earnings and as such may be related negatively to the measured rate of return.

The growth-in-earnings measure, X_1 , has a nonsignificant negative coefficient in regression (3) where X_2 , growth in equity value, is absent. This seems to indicate that the trend of the series of past earnings has some but not much importance in correcting the measured rate of return. Indirectly, it suggests a relatively low positive correlation between growth in earnings in two consecutive time intervals.

In regression (3), X_1 is the only measure of growth entered; in (1), X_2 equity growth is also included. Since X_2 is positively correlated with X_1 , and is better correlated with y , X_2 "robs" the corrective function of X_1 in regression (1) and even causes X_1 to reverse signs in two of the four years. In fact when both growth variables are entered, the growth-in-earnings coefficients tend to become more positive and those of growth in equity value more negative as was expected.

Growth in Equity Value: (X_2). We have argued previously that the larger the recent change in equity value, concomitant with a change in expected income, the larger the lag behind expected income of the earnings measure used in the rate of return. By introducing rate of growth in equity value as an independent variable, and utilizing its negative correlation with the rate of return we expect to correct for this error in the measurement of expected income.

In regression (2), where growth in equity value X_2 is the only growth variable, the coefficients of X_2 generally emerge with a significant negative sign. This result clearly points in the theoretically anticipated direction. It indicates that growth in equity value serves as a

TABLE 1—PARTIAL REGRESSION COEFFICIENTS AND THEIR STANDARD ERRORS
(IN PARENTHESES)

Regression	X_1 Earnings Growth	X_2 Equity Growth	$\text{Log } X_3$ Pay-out Ratio	$\text{Log } X_4$ Earning Stability	$\text{Log } X_5$ Equity Stability	$\text{Log } X_6$ Size	$\frac{X_7}{\text{Debt}} \div$ Equity	R^2
1954								
(1)	-.0002 (.0037)	-.0052 (.0030)	-.543 (.175)	-.104 (.067)	+.171 (.116)	-.111 (.031)	-.00010 (.00088)	.507
(2)		-.0052 (.0024)	-.538 (.152)	-.104 (.067)	+.173 (.113)	-.111 (.030)	-.00009 (.00085)	.507
(3)	-.0037 (.0031)		-.529 (.178)	-.112 (.069)	+.176 (.118)	-.126 (.030)	+.00004 (.00090)	.477
1955								
(1)	-.0004 (.0004)	-.0039 (.0030)	-.242 (.173)	-.099 (.068)	+.102 (.121)	-.090 (.030)	-.00077 (.00090)	.369
(2)		-.0041 (.0025)	-.235 (.158)	-.100 (.067)	+.105 (.116)	-.091 (.030)	-.00074 (.00085)	.369
(3)	-.0003 (.0031)		-.225 (.173)	-.107 (.068)	+.101 (.121)	-.101 (.029)	-.00071 (.00090)	.347
1956								
(1)	+.0001 (.0024)	-.0067 (.0037)	-.342 (.187)	-.141 (.085)	+.160 (.132)	-.084 (.031)	-.00179 (.00110)	.423
(2)		-.0066 (.0033)	-.345 (.180)	-.143 (.082)	+.161 (.130)	-.084 (.031)	-.00181 (.00107)	.423
(3)	-.0015 (.0021)		-.147 (.164)	-.185 (.080)	+.295 (.109)	-.080 (.030)	-.00181 (.00077)	.423
1957								
(1)	+.0014 (.0026)	-.0076 (.0038)	-.380 (.170)	-.079 (.090)	+.131 (.146)	-.079 (.035)	-.00195 (.00086)	.375
(2)		-.0067 (.0033)	-.403 (.164)	-.089 (.088)	+.133 (.145)	-.079 (.033)	-.00208 (.00083)	.371
(3)	-.0007 (.0024)		-.260 (.164)	-.107 (.092)	+.311 (.117)	-.102 (.034)	-.00182 (.00089)	.325

good corrector for a deficiently measured rate of return and lends support to the contention that book earnings, however correct *ex post*, tend to lag behind expected income. This result establishes one interesting aspect of the unavoidable error in the measurement of expected

income, and corrects the measured rate of return in the right direction.

Which measure of growth shall be used? We have learned from the empirical results that the trend in equity value, X_2 , performs better than the earning trend, X_1 , as a corrector for a deficiently measured rate of return. When X_2 is substituted for X_1 in regressions (2) and (3), the total coefficient of determination increases and coefficients of the other independent variables become more stable over time. Moreover as X_1 , growth in earnings, is added to the regressions already containing X_2 [regressions (2) and (1)], the addition to the total explanation is barely noticeable; and the effect on the performance of the other independent variables is minute. When X_2 , growth in equity value, is added to the regression where X_1 , growth in earnings, has already been included then the addition to the explanation of the variance of y is appreciable; and the performance of the other independent variables is affected, including, of course, the reduction in expected performance of X_1 to less than statistical significance. On the basis of a superior performance of X_2 and the fact that the coefficients of the other variables are more stable over time with X_2 rather than X_1 in the regression, we shall choose regression (2) for subsequent exposition of remaining empirical results.

The Pay-out Ratio (X_3). The dominant feature characterizing the performance of the pay-out ratio is a negative statistically significant coefficient, indicating that the higher is the pay-out ratio the higher is the value of the firm.

We have already rejected as an interpretation of this result that, *ceteris paribus*, investors prefer distribution to retention of earnings. Instead, the pay-out ratio may represent, in the capacity of an instrumental variable, the extent of error in the measurement of expected income. The more measured earnings overestimate expected income, the higher is the measured rate of return and simultaneously the lower the measured pay-out ratio. Consequently it is to be expected that the pay-out ratio would be negatively associated with y , and would thus play a useful part in the regressions. We derive additional support for this view from the fact that the pay-out ratio coefficients become substantially more significant in the negative direction with the inclusion of growth variables in the regressions [1, pp. 65-67]. This is best exemplified in the 1956 multiple regression of $\log y$ on X_1 , X_2 , $\log X_3$, $\log X_4$, $\log X_5$, $\log X_6$, and X_7 . The partial regression coefficient of $\log X_3$ and its standard error were respectively .342, .187. In the same regression, except for the omission of X_2 , the partial regression coefficient of $\log X_3$ and its standard error were respectively .147, .164.

The relation of X_3 with the growth measures suggests that the particularly successful performance of X_3 may be due to the inclusion of

growth measures in the regressions. The relationship of X_3 with the rate of return appears in the regressions when growth is held constant. For the same growth rate, a company with a higher pay-out ratio is a company which was more successful in the past and may be expected to continue to be more profitable in the future. Alternatively stated, growth is in fact higher when it is not paid for by low dividends. The firm with a higher pay-out ratio perhaps grew to a larger extent because of improvement in cost conditions and/or favorable shifts in demand and to a lesser extent because of retained earnings. Hence, when growth is included, X_3 indicates a relatively higher level of expected income. In this role X_3 , the pay-out ratio, serves as a corrector for an incomplete measurement of expected income in the measured rate of return.

To summarize: The fact that X_3 coefficients become more significantly negative when growth measures are included in the regression lends support to the argument that the negative association between X_3 and y is due to errors in the measurement of expected income, and reinforces the claim that X_3 , the pay-out ratio, is a corrector for the deficiently measured expected income in the measured rate of return.

Stability in Earnings (X_4). The partial regression coefficient of X_4 in the four cross-sections is consistently negative, although only barely significant. Thus, the hypothesis of a preference for earnings stability is modestly supported.

It is also noteworthy that X_4 performs better in the direction predicted when X_5 , stability in equity value, is present in the same regression. In the absence of X_5 the t -ratios of X_4 coefficients drop considerably [1, pp. 65-67]. The reinforcement of X_4 by the presence of X_5 is substantial. In the absence of X_5 , the positive relation between X_4 and the rate of return, y , rubs off on X_4 due to a positive correlation between X_4 and X_5 (the earning stability and the stability of equity value).

Stability of Equity Value (X_5). Do investors find the stability of equity value desirable or undesirable? The coefficient for stability of equity value appears with a positive sign, and modest t -ratios. Its reliability is fortified by consistency rather than by the level of significance in the separate cross-sections. It indicates that the market has an aversion to, rather than a preference for, the stability of equity values thus lending support to the less orthodox of the two alternative points of view presented in this connection.⁸

The positive coefficient for X_5 , stability of equity value, is enhanced

⁸ Other hypotheses may also be consistent with the performance of stability of equity value, but the "aversion to equity stability" was the one chosen in advance since it seemed the most reasonable.

when X_4 , stability of income, is included in the regression [1, pp. 65-67]. In two of the four cross-sections the sign is reversed from negative to positive, and in others the X_5 coefficient becomes more significantly positive. The relation of X_5 to X_4 seems to be parallel to the relation of X_4 to X_5 . The negative coefficient of X_4 is enhanced when X_5 is included, and the positive coefficient of X_5 is enhanced when X_4 is included. The regressions show the relationship of each with the rate of return, while the other is held constant.

Size (X_6). We claimed that shares of stock of larger firms are more easily sold without significantly affecting market price, that larger firms are better known and therefore their shares of stock are more in demand, and that larger firms may be considered safer simply due to their size. Consequently we predicted a negative relation between size and the measured rate of return. Our results strongly support our expectation. The performance of the size coefficient compares favorably with that of all other variables in the model. Its performance over time is the most consistent. The signs of the coefficients are negative throughout, and their t -ratio is always well over 2. Thus the contention that larger firms are preferred in the market is well supported.⁹

The Debt-Equity Ratio (X_7). The debt-equity ratio results are difficult to interpret. In all four cross-sections the coefficient for X_7 is negative [regression (2)], and in 1956 and 1957 it is quite significant. This indicates that the higher is the debt-equity ratio the lower is the measured rate of return, or a higher value for the equity is associated with a higher debt.

In discussing the rationale for including X_7 among our independent variables, we pointed out that the debt-equity ratio can be interpreted in two ways: (1) If it represents deviations from its equilibrium value, then it ought to be positively associated with the rate of return. (2) If it were to be measured at its equilibrium level it ought to be negatively correlated with the rate of return, since then it becomes a measure of safety. The results, *prima facie*, support the latter interpretation.

But in the light of the particular variables entered in the multiple regression, still another interpretation is admissible. If a relevant measure of size is the combined value of both equity and debt, then for a given value of equity the debt-equity ratio becomes a complementary measure of size. The higher the debt-equity ratio for a given equity, the larger is the sum of equity and debt. In the multiple regression, X_6 ,

⁹In this connection, if X_6 is measured with an error (measured equity value being randomly distributed around "true" equity value) a negative bias may be built into the regression relationship between the log of the measured rate of return and log X_6 . This may be true since X_6 constitutes the denominator of the measured rate (y/X_6), and an error in X_6 will affect both sides of the regression equation in opposite directions. However, in this study such errors have only a minor effect [1, pp. 59-69].

equity value, is entered along with the debt-equity ratio as an independent variable. Therefore, the regression relationship of the debt-equity ratio with the measured rate of return is determined while holding equity value constant, which in turn may make the debt-equity ratio in the context of this study a measure of size and thus account for its negative relationship with the dependent variable.

III. Conclusions

The strongest result is in the case of X_3 , the size variable. Its performance constitutes a handsome realization of expectations: it is consistent and the most significant statistically. It indicates a negative relation with the rate of return in all four cross-sections firmly establishing that, *ceteris paribus*, the market prefers larger to smaller firms.

The most interesting result is the emergence of the coefficients for stability of equity value with positive signs in all four cross-sections. Contrary to the commonly accepted notions that equity stability is preferred, the results lend support to the theory that equity stability is avoided. This result merits further theoretical as well as empirical attention.

The performance of the coefficients for stability of income is as expected; the coefficients emerge with negative signs indicating a preference for stability of earnings.

The debt-equity ratio relationship shows inconclusive results difficult to interpret unequivocally. Although in all four cross-sections its coefficients are negative, it is unwarranted to conclude that a high debt-equity ratio is an indicator of a desirable characteristic, since in the context of this study the debt-equity ratio could be mainly a measure of size thereby obliterating its use as a measure of risk. One possible improvement would be to enter in the regression the sum of equity and debt, thereby insuring that the debt-equity ratio does not serve in fact as a measure of size. Another obvious empirical improvement over the method used in this study would be to define equity in the denominator of the debt-equity ratio as an average of a few years preceding the cross-section year itself. This might rid the debt-equity ratio of a random component, which is built into the empirical definition by using only the cross-section-year average for equity.

The function of the growth variables was visualized as the correction of the measure of expected income in the numerator of the measured rate of return. In this capacity their coefficients were expected to have negative signs. The growth variables performed as was expected.

In its capacity as a corrector the pay-out ratio produces significantly negative coefficients. These are likely to stem from errors in measurement of income due either to the transitory nature of any period's

actual earnings, which renders these earnings different from their mean, or to accounting misrepresentation of both actual earnings and expected income.

Finally, it is hoped that this study will stimulate awareness of difficulties involved in the measurement of both the dependent and independent variables and that the distinction between corrective and explanatory variables may be employed advantageously in further work.

REFERENCES

1. H. BENISHAY, *Determinants of Variability in Earnings Price Ratios of Corporate Equity*. Unpublished doctoral dissertation, Univ. Chicago, 1960.
2. L. FISHER, "Determinants of Risk Premiums on Corporate Bonds," *Jour. Pol. Econ.*, June 1959, 64, 217-37.
3. B. GRAHAM AND D. L. DODD, *Security Analysis*, 3rd ed. New York 1951.
4. M. G. KENDALL, "The Analysis of Economic Time Series. I," *Jour. Royal Stat. Society (Ser. A)*, 1953, 116, 11-25.
5. F. MODIGLIANI AND M. H. MILLER, "The Cost of Capital, Corporate Finance, and the Theory of Investment: Reply," *Am. Econ. Rev.*, Sept. 1959, 49, 655-69.
6. M. F. M. OSBORNE, "Brownian Motion in the Stock Market," *Jour. Op. Research Soc. Am.*, Mar.-Apr. 1959, 7, 145-73.
7. H. V. ROBERTS, "Stock Market 'Patterns' and Financial Analysis: Methodological Suggestions," *Jour. Finance*, Mar. 1959, 14, 1-10.
8. *Moody's Handbook of Widely Held Common Stocks*. New York 1955-1958.
9. *Moody's Industrial Manual*. New York 1953-1958.
10. *Standard & Poors' Stock Guide*. New York 1953-1958.

FINANCIAL INTERMEDIARIES AND THE LOGICAL STRUCTURE OF MONETARY THEORY

A Review Article

By DON PATINKIN*

Specialization is the essence of economic life. And the particular aspect of specialization which John G. Gurley and Edward S. Shaw have undertaken to analyze in their recent—and long-awaited—book¹ is that between earning income and disposing of it. It is this specialization that is “the basis for debt, financial assets, and financial institutions” (p. 17). Conversely, the existence of such financial arrangements is a necessary condition for the transfer of funds from savers to investors. Thus the ability of an economy to draw resources to their most efficient uses depends in a crucial way on the efficiency of its financial system (p. 56).

The workings of this financial system are studied by Gurley and Shaw (henceforth referred to as G-S) in a fresh and provocative way. Indeed, this is their major contribution: the detailed presentation of a conceptual framework from which they fruitfully reconsider old and familiar problems, and fruitfully undertake the analysis of new and unfamiliar ones.

I. The Main Argument

The main theme of the book is the development of “a theory of finance that encompasses the theory of money, and a theory of financial institutions that includes banking theory” (p. 1). By this first objective is meant the presentation of the theory of money as part of a general theory of optimum portfolio selection (p. 57). Similarly, by the second objective is meant the presentation of the theory of the banking system as part of a general theory of the choice of optimum portfolios of assets and debts by financial institutions of various kinds.

In accomplishing their first objective, the authors follow in the footsteps of Keynes, Joan Robinson, Hicks, and Tobin—to whom they make explicit acknowledgments (p. x). In this connection they provide a wealth of instructive and illuminating detail on the overriding objective of risk-avoidance which leads individuals to diversify their portfolios (p. 117), and on the comparative advantages and disadvantages of the various assets amongst which this diversification is carried out [tangible assets, short- and long-term

* The author is professor of economics at the Eliezer Kaplan School of Economics and Social Sciences, The Hebrew University, Jerusalem, and also director of research of the Falk Project for Economic Research in Israel.

¹ *Money in a Theory of Finance*, by John G. Gurley and Edward S. Shaw, with a Mathematical Appendix by Alain C. Enthoven. Washington, D.C.: The Brookings Institution, 1960. Pp. xiv, 371. \$5.00.

bonds, constant-purchasing-power bonds, stocks, and "blue chips" (pp. 32-33, 159-73)]. G-S then go on to show that there are forces leading to security differentiation on the supply side as well. In brief, "excess demands, positive or negative, for current output are of necessity excess supplies of securities, and the sectoral location of excess demands partly determines the types of primary securities that will be issued. . . . Sharecroppers cannot issue commercial paper, or farmers corporate bonds, or business firms Treasury bills. . . . The real world and the financial world are one world" (pp. 120, 122-23).

At the same time, G-S explicitly disclaim any intention to "advance in the least the theory of risk and uncertainty" (p. 10; also p. 92). Furthermore, their statement of the conditions that define an optimum portfolio is, to say the least, vague. This optimum is merely described (for a portfolio consisting of tangible assets, bonds, and money) as a situation which obtains when there exists a certain imprecisely specified relationship among the "marginal rental rate" (i.e., marginal productivity of capital—p. 26), the rate of interest, and the "implicit deposit rate" (pp. 32-33; also bottom of p. 119, and p. 127). By this last is meant some measure of the traditional transactions, precautionary, and speculative benefits of holding money, in addition to the possible benefits to be derived from a decrease in the price level (pp. 31-33, 70-71, 151-53). But nowhere is this rate explicitly defined. Indeed, there is not even an unambiguous statement of its dimensions! At one point (p. 32, top) it seems to have the dimensions of utility, while at another (p. 152) it seems to have those of a percentage, or even of money.²

Thus it is not in the direction of the pure theory of portfolio selection that G-S's contribution lies. This, instead, is to be found in the accomplishment of their second objective: namely, the analysis of "financial intermediaries," that is, "financial institutions whose principal function is the purchase of primary securities and [by?] the creation of claims on themselves" (p. 363). Here G-S are breaking new ground all the way. First, they bring "nonbanking" or "nonmonetary" financial intermediaries [e.g., insurance companies, savings and loan associations, mutual savings banks, pension funds (p. 193)] out of the limbo to which they have been relegated by most economic theory, and analyze them both from the viewpoint of their influence on the "real" variables of the system (namely, the rate of interest, and thereby the levels of savings and investment), and from the viewpoint of their impact on the banking system.

Second, they most stimulatingly show (and this is one of their main themes) that the banking system itself is only one (albeit, usually the most important one) amongst many different kinds of financial intermediaries. In one of those striking passages that recur throughout the book they write:

There are many similarities between the monetary system and non-monetary intermediaries, and the similarities are more important than the

²This dimensional confusion is particularly noticeable on page 66 where we are told that an optimum position obtains when there exists "a balance among marginal utility of consumption, the rate of interest, and the marginal implicit deposit rate for real money." This passage also illustrates the imprecision of G-S's description of the optimum—for what is the meaning of "balance"?

differences. Both types of financial institution create financial claims; and both may engage in multiple creation of their particular liabilities in relation to any one class of asset that they hold (p. 202).

The difference between the monetary system and nonmonetary intermediaries in this respect, then, is not that one creates and the other does not, but rather that each creates its own unique form of debt. . . . Money is unlike other financial assets, for it is the means of payment. Corporate stocks are unlike other financial assets, too, for they carry ownership rights in corporations. And policyholders' equities in insurance companies are different because they are linked to certain insurance attributes (pp. 198-99).

Similarly, G-S insist on analyzing the economic behavior of the banking system—like that of any other intermediary—in terms of its attempts to achieve an optimum portfolio of assets and debts within the restrictions imposed upon it. This approach is to be contrasted with the usual tendency of economists to treat the banking system as the Cinderella of monetary policy: as a parasitic member of the community, permitted to earn its living by doing something which—if it only wanted to—the government could do without cost (namely, creating money); as a member whose existence is accordingly suffered, and on whom we can therefore impose without compunction any restrictions deemed necessary by monetary policy. What G-S have shown is that the banking system has a purpose and a soul, and that if its welfare is not properly considered, it will wither up and die. The acceptance of G-S's approach should go far toward eliminating that War of Amalek between economists and bankers with which we feel it our duty to indoctrinate our beginning students.

One of the main questions that concern G-S is the relationship between the real and the financial in the growth process. On the one hand, they emphasize that improvements and innovations in "financial technology" can speed up this process by expediting the flow of funds from savers to investors, and thereby reducing the rate of interest. Under the heading of such technological improvements come improved distributive techniques (better communications, lower transactions costs, and generally the perfection of a well-developed securities market) and the emergence of financial intermediaries, primarily of the nonmonetary type (pp. 123-26).

On the other hand, G-S continuously stress that an integral part of the growth process is an increasing demand for real financial assets—in the form of both money and securities. Correspondingly, one of the questions to which they repeatedly return is the "neutrality" of money in this process: whether it makes any difference to the economy whether the increased real money balances it demands are supplied by an increase in the nominal quantity of money or by a decline in the absolute price level. Here the authors reconfirm the conclusion that, in the absence of money illusion, distribution effects, and rigidities, it does not make any difference. At the same time, on the familiar grounds that these assumptions are not likely to prevail in the real world, they make clear their own preference for accompanying the growth process with a concomitant growth in the nominal money supply (pp. 179-87). They also nicely emphasize that by adopting a policy of increasing nominal money

at a constant price level, the government is in effect borrowing from the private sector at a zero interest rate, and can make use of these borrowings to finance an investment program that will further speed up growth (pp. 41-42). Alternatively, it can accomplish the same result by injecting the new money into the economy in such a way as to lower the rate of interest (pp. 185-87).

G-S also provide a formal analysis of the implications of the balanced-growth process for the stock of securities in the economy (pp. 95-112). There are, however, some loose ends to this analysis.³ But my main reaction is to attach considerably less importance to this analysis than the authors seem to: for the balanced-growth assumption precludes from the outset just those possibilities of changing portfolio compositions and changing money velocities that should be of primary interest to monetary theorists (cf., e.g., pp. 110-11).

A recurrent and basic theme of G-S's book is that the growth in the totality of financial assets has a "scale effect" on the demand for any one given financial asset, and for money in particular (pp. 167, 170, 174, 177-78, 203). It is here that I find some of the most questionable aspects of G-S's argument. First, this totality of assets is measured in a gross way, without netting out any concomitant increase in debt. Second, the influence of these assets is conceived as something distinct from the influence of real wealth (p. 173, bottom). All this is part of G-S's repeatedly emphasized "gross money doctrine," which will be discussed in detail in the next section of this review. There it will be shown that G-S's "doctrine" stems from a basic misunderstanding. It will also be argued that the proper variable for the analysis of demand for any good, including money and securities, is total *net* wealth, including wealth in the form of financial assets.⁴

A great virtue of G-S's book is that the authors tie in their theoretical analysis with policy recommendations. Furthermore, it is abundantly clear to

³ I have in mind the following points: (a) In their analysis of the debt-income ratio in equation (6) on page 105, G-S do not even advert to the possibility of n (the rate of growth) being less than i (the rate of interest). Nor do they consider the case in which the marginal productivity of capital equals the rate of interest, so that the debt-income ratio reduces to the capital-output ratio. (b) It is contended that the existence of cyclical movements "is a drag on the growth of primary securities and financial assets" (p. 115). But it is not explained why this should cause the growth to be smaller over the period as a whole than that which would have taken place if the economy had expanded smoothly at the average rate of growth which obtained. (c) Ambiguity also surrounds the discussion of "mixed asset-debt positions," e.g., the position of a firm which issues securities in order to finance the holding of money (pp. 112-13). This will clearly increase the *absolute* supply of securities. But it should have been made clear that as long as the degree of "mixedness" remains constant there is no effect on the *rate* of growth of outstanding securities.

⁴ I hasten to add that my own treatment of this question in *Money, Interest, and Prices*, Evanston, Ill., 1956, is not satisfactory: for there too demand is *not* represented as being dependent on the aggregate value of physical and monetary assets together (p. 126; see also pp. 205-6). On the other hand, it is not, strictly speaking, always correct to assume that the dependence of demand is on total wealth—that is, solely on the discounted value of the income stream. Under certain assumptions, it can be shown that the time-shape of the income stream also affects demands.

the reader that the authors have built their theoretical structure on the basis of a close and intimate knowledge of the realities of a modern financial system. Indeed we are explicitly told (p. vii) that the book is the outgrowth of an empirical study of financial institutions in the United States, the complete version of which is yet to be published.

One of G-S's policy conclusions is that there should be a greater integration—if not consolidation—of monetary and government-debt management. "Government debt, on the one hand, and debts of the monetary system on the other, are each so important a segment of total financial assets that management of them by different authorities working for dissimilar goals must be expensive in real interest costs to the Treasury, in monetary stability, or in real earnings of the banking system" (p. 280). This is not an unfamiliar contention, but it receives new force when viewed from the conceptual framework which G-S provide.

More novel conclusions are that monetary policy does not require either a legal or customary minimum reserve ratio; that, indeed, such a ratio forces the private banking sector frequently to become a "disequilibrium system"—for it is forcefully prevented in this way from achieving its optimum portfolio; and that, accordingly, a policy of paying banks a variable rate of interest on their deposits at the central bank (including the possibility of imposing negative rates) is a more desirable, and more flexible, means of influencing the banking system so as to contract and expand in accordance with the desiderata of monetary policy (pp. 266-71, 289).

Finally, and most interestingly, G-S argue that the choice of the banking system as the sector through which monetary policy is usually effected has worked to the disadvantage of this system as compared with other types of financial intermediaries. It is to this that they attribute the declining net profit-asset and capital-asset ratios of the banking system. Their suggested solutions for this state of affairs range from 100 per cent money and a nationalized bank system to the spreading of controls over nonbanking financial intermediaries as well, "so that the burden of control is distributed more evenly among issuers of financial assets." These controls "may also be extended to . . . issuers of primary securities, as illustrated by consumers credit regulations or by private capital issues restrictions" (pp. 288-91).

Whether or not one accepts these conclusions, there can be no doubt that future discussion of these problems will have to consider the points raised by G-S, and can also profitably make use of the analytical framework they have provided for this purpose. In brief, their book is one that must be read by every serious student of monetary theory and policy.

At the same time I must note that G-S's book suffers from some serious failings. First of all, its language is occasionally woolly and imprecise, and too frequently tends to the overdramatic (cf., e.g., pp. 39-40, 118, and especially 141-42). More important, the book is much too repetitious—to a degree that goes far beyond the degree of "judicious repetition" dictated by the author's perfectly justified plan of proceeding from simple to more complicated models. What is accomplished by describing the nature of the

demand for money in essentially similar ways first on pages 32-33, then on pages 70-71, and finally on pages 150-53? And the same may be asked for the triple discussion of the neutrality of money on pages 39-46, 82-88, and 179-87. Why is security diversification discussed under three separate headings on pages 70-72, 117-19, and 150-52, respectively? This repetition is not only tiring but at times actually confusing. There is no doubt that *Money in a Theory of Finance* would have been a better book, and one with a much sharper impact, if it had been cut considerably.

On the other hand, despite the repetition, the reader is sometimes left in the dark as to the nature of the assumptions on which the argument at specific points is based. Thus he must infer for himself that the discussion of Chapter 4 is based on the assumption that all money is of the "inside" variety (see next section), and the same is true for Chapter 7. Similarly, only later does it become clear that the argument on pages 79-81 assumes a balanced-growth process. And he is left to extend for himself the flow-of-funds table of page 22 to the discussion on pages 58-59, where it is really essential for a full understanding of the argument.

The second failing of the book stems from G-S's straining at "iconoclasm" (p. ix). This is what leads them to some of the stylistic excesses already noted. More important, it prevents them from lending a sufficiently understanding ear to some of the teachings of the Old Gods, including the Keynesian ones. As a result G-S sometimes misinterpret these teachings. And sometimes they fail to see the deeper relationship between these teachings and their own, a fact which prevents the reader (and frequently the authors too!) from seeing the full significance of the argument. We will see the main examples of this in Sections II and III below.

The last failing of the book is that it is involved in serious error at some points which are fundamental to its theoretical structure. This is what will be shown in Sections II and IV below.

Not much will be said here of the Mathematical Appendix to the book, which was written by Alain C. Enthoven. This gives a good deal of emphasis to the problem of balanced growth. I might, however, point out that this appendix makes repeated use of Samuelson's "Correspondence Principle" without really answering the criticisms which have demonstrated its limited applicability (p. 328, n. 25). My main criticism, however, is on the grounds of omission: There is not always full communication between appendix and text. More important, the appendix does not treat just those crucial and incorrectly analyzed issues referred to in the preceding paragraph; and what makes this omission particularly unfortunate is that the errors are of a type that might have been caught by a mathematical cross-checking of the argument. All this will become clear from what follows.

II. "Inside" and "Outside" Money

One of G-S's significant contributions is in bringing to the fore the distinction between money based on private domestic debt ("inside money") and

money of a fiat nature or based on any other asset ("outside money"). Nevertheless, as already indicated, the analytical developments which G-S base on this distinction are themselves involved in error. In order to show this, we must first describe G-S's model in somewhat greater detail.⁵

In a familiar fashion, this model divides the economy into three sectors (consumers, business firms, and government) and four markets (labor services, current output, bonds, and money). Two additional notions crucial to G-S's analysis are that of "nonfinancial spending units" and "primary securities." By the former is meant "spending units whose principal function is to produce and purchase current output, and not to buy one type of security by issuing another" (p. 59). Correspondingly, "primary securities" are defined as "all liabilities and outstanding equities of nonfinancial spending units" (*ibid.*). All consumers and firms in the preceding model are assumed to be nonfinancial spending units. Only firms, however, are assumed to issue primary securities, and these for simplicity are assumed to have the form of a homogeneous perpetuity paying \$1 annually, so that its price is the reciprocal of the rate of interest, or $\$1/i$.

Since money is a type of security, and since the government (assumed to consist of both a Policy and a Banking Bureau) can acquire primary securities by issuing money, it is not a spending unit but a financial intermediary. Correspondingly, the debt of government, like that of any such intermediary, is referred to as an "indirect security." In this simple model the only such security is money. The term "financial asset" refers to both direct and indirect securities. Purchase of primary securities by consumers is referred to as "direct finance"; purchase by financial intermediaries (government, in this case), as "indirect finance" (pp. 59-61; 93-95).⁶

Each of the three sectors has a budget restraint, showing the sources and uses of its funds: this is essentially what is shown by the flow-of-funds account (p. 22). Each of these restraints states that the excess of receipts over spending (on capital as well as current account) must equal the sector's net accretion of financial assets (bonds and money). Every economic unit is classified as "surplus" or "deficit" according to whether this excess is positive or negative (p. 21). For the most part, households are surplus units and firms deficit units.

The nature of the relationships among the sectors of this economy can then be illustrated by the sectoral balance sheets of Table 1—where the symbols M^b , B , M^h , B^h , B^g and M are defined as indicated. From the definition given at the beginning of this section, it is clear that the economy described by this table has 100 units of inside money (corresponding to the value of the bonds held by the government and monetary sector) and 75 of outside money (cor-

⁵What the following actually describes is G-S's "modified second model" (pp. 82 ff.). This includes features present only in the "rudimentary model" of Chapter 2.

⁶Actually, the classification of the government is ambiguous, though G-S do not recognize it as such in their discussion on page 94. To the extent that it issues inside money, it is a financial intermediary. But to the extent that it issues fiat outside money to cover a deficit on current account, it is just like any other nonfinancial spending unit.

TABLE 1—SECTORAL BALANCE SHEETS

Business Sector				Consumer Sector			
<i>Assets</i>		<i>Liabilities</i>		<i>Assets</i>		<i>Liabilities</i>	
Money (M^b)	50	Bonds (B^b)	500	Money (M^A)	75	None	
Tangible	900			Bonds (B^A)	400		
		<i>Net Worth</i>				<i>Net Worth</i>	
		Accumulated				Accumulated	
		Savings	450			Savings	475
	950		950		475		475

Government and Monetary Sector			
<i>Assets</i>		<i>Liabilities</i>	
Bonds (B^G)	100	Money (M)	175
		<i>Net Worth</i>	
		Accumulated	
		Savings	— 75
	100		100

responding to the fiat money issued to finance the cumulated deficit of this sector).

In order to evaluate G-S's further analysis of this model, it will first be necessary to depart somewhat from their description of the demand functions. In particular, assume for simplicity's sake, and in accordance with recent developments,⁷ that the household demand functions depend on its total wealth. The essential point for monetary theory is that this wealth also consists of the household's initial holdings of financial assets. This, indeed, is the origin of the real-balance and real-indebtedness effects. In particular, it is assumed that these demand functions depend upon—in addition to the rate of interest, i —household wealth, W , where

$$(1) \quad W = T + \frac{\frac{B_0^A}{i} + M_0^A}{p},$$

where T represents the discounted value of the income stream; p represents the price level; and where the subscript "0" indicates given, initial quantities. Since the present discussion is restricted to a stationary state, T is constant and so can be disregarded in what follows. In a similar way it is assumed that businesses' demand functions depend on:

$$\frac{\frac{B_0}{i} + M_0^b}{p}.$$

Let us now make the further assumption that in the economy as a whole

⁷ Milton Friedman, *A Theory of the Consumption Function*, Princeton 1957, pp. 7-10.

there are no distribution effects; that is, that the aggregate demand of the economy depends only on the total of assets, and not on their distribution as between households and businesses. This means that these functions depend upon:

$$(2) \quad \frac{\left(\frac{B_0^h}{i} + M_0^h\right) + \left(-\frac{B_0}{i} + M_0^b\right)}{p}$$

Making use of the definitions:

$$(3) \quad M_0 = M_0^h + M_0^b, \quad \text{and} \quad B_0 = B_0^h + B_0^s,$$

we can reduce this to:

$$(4) \quad \frac{(M_0^h + M_0^b) + \frac{1}{i}(B_0^h - B_0)}{p} = \frac{M_0 - \frac{1}{i}B_0^s}{p}.$$

This last is clearly identified as the net real debt of the government sector to the private sector, or alternatively as the real value of outside money.

Making use of the preceding, let us write the following demand and supply functions:

$$(5) \quad E = F\left(Y_0, i, \frac{M_0 - \frac{1}{i}B_0^s}{p}\right)$$

= aggregate demand for commodities;

$$(6) \quad \frac{B^d}{rp} = H\left(Y_0, i, \frac{\frac{B_0^h}{i} + M_0^h}{p}\right)$$

= households' demand for real bond holdings as a stock;

$$(7) \quad \frac{B^s}{rp} = J\left(Y_0, i, \frac{-\frac{B_0}{i} + M_0^b}{p}\right)$$

= businesses' supply of real bond holdings as a stock;

$$(8) \quad \frac{M^d}{p} = L\left(Y_0, i, \frac{M_0 - \frac{1}{i}B_0^s}{p}\right)$$

= aggregate demand for real money holdings as a stock.

The foregoing system of equations has ignored the market for labor, for this is assumed to be in full-employment equilibrium (pp. 10, 26). In order to keep the discussion here related to the G-S one, the functions are also as-

sumed to depend on national income, Y , though the assumption that they depend on wealth might be taken to imply that this additional dependence on Y is otiose. Since in any event Y is assumed to be constant at Y_0 , this issue will not affect the subsequent argument.

Assume that all demands are positively dependent on income⁸ and net financial assets. On the other hand, business supply of bonds is negatively dependent on these variables; for the higher are a business' financial assets, the less it need be dependent on debt financing. What must now be emphasized is that the assumed absence of distribution effects implies that if households' financial assets increase by the same amount that firms' decrease, then the former's increased demand for bonds is exactly offset by the latter's increased supply. That is, the absence of distribution effects implies that at the level of aggregate behavior it is only the sum total of financial assets in the economy that matters. Hence the private sector's *excess* demand function for bonds—defined as the households' demand minus firms' supply—must have the form:⁹

$$(9) \quad B \left(Y_0, i, \frac{M_0 - \frac{1}{i} B_0^s}{p} \right) \\ \equiv H \left(Y_0, i, \frac{\frac{B_0^h}{i} + M_0^h}{p} \right) - J \left(Y_0, i, \frac{-\frac{B_0}{i} + M_0^b}{p} \right).$$

On the basis of the foregoing discussion we can now write our general-equilibrium equations as:

	<i>Equilibrium Condition</i>	<i>Market</i>
(10)	$F \left(Y_0, i, \frac{M_0 - \frac{1}{i} B_0^s}{p} \right) - Y_0 = 0$	commodities,
(11)	$B \left(Y_0, i, \frac{M_0 - \frac{1}{i} B_0^s}{p} \right) + \frac{B_0^s}{ip} = 0$	bonds,
(12)	$L \left(Y_0, i, \frac{M_0 - \frac{1}{i} B_0^s}{p} \right) - \frac{M_0}{p} = 0$	money.

If all money is of the outside variety, then $B_0^s = 0$, and the foregoing system reduces to a very familiar form. G-S, however, are primarily interested in

⁸For reasons which are never explained G-S assume that the income elasticity of demand for money is greater than that for bonds (p. 71). This unexplained assumption is an important component of their subsequent argument (pp. 157-58).

⁹In mathematical terms, absence of distribution effects implies that $H_3(\) + J_3(\) \equiv 0$, where $H_3(\)$ and $J_3(\)$ represent the partial derivatives with respect to the third argument.

the opposite case, in which money is entirely of the inside variety. This means that:¹⁰

$$(13) \quad M_0 = \frac{B_0^p}{i},$$

which in turn implies that the net financial assets of the private sector are zero. Hence system (10)-(12) reduces to:

$$(14) \quad F^*(Y_0, i) - Y_0 = 0,$$

$$(15) \quad B^*(Y_0, i) + \frac{M_0}{p} = 0,$$

$$(16) \quad L^*(Y_0, i) - \frac{M_0}{p} = 0,$$

where $\frac{M_0}{p}$ simultaneously represents the government's real holdings of bonds and the total real quantity of money in the economy—and where the asterisks remind us that these functions differ from those of system (10)-(12).

The foregoing analysis has made use of what G-S call the "net-money doctrine": the "approach to monetary theory [which] nets out all private domestic claims and counterclaims before it comes to grips with supply and demand on the money market" (p. 134). This they contrast—very unfavorably—with the "gross-money doctrine" which "avoids such consolidation of financial accounts" (*ibid.*). Thus in the case of Table 1, according to G-S, the net-money doctrine would say that the quantity of money is 75, while the gross-money doctrine would say that it is 175 (pp. 134-36). Against the net-money doctrine G-S then bring to bear a detailed and elaborate criticism (pp. 134-49). But as we shall now see, this criticism is quite beside the point and stems simply from a misunderstanding of the fundamental distinction between dependent and independent variables of the analysis, a misunderstanding which mars G-S's argument at other points in their book as well.¹¹ In particular, G-S fail to distinguish properly between bond and money holdings as dependent variables (B^d , B^s , and M^d) and these holdings as independent variables (B_0^h , B_0 , M_0^h and M_0^b).¹²

More specifically, G-S fail to realize that even though it is the *net aggregate value* of financial assets which is the proper *independent* variable of the demand functions of the private sector, it is the *individual financial assets* which are the proper *dependent* variables of the analysis. Thus in the special case of all money being inside money, system (14)-(16) shows that net financial assets disappear as arguments (i.e., *independent* variables) of the demand

¹⁰ Strictly speaking, the following relationship implicitly assumes that all government capital gains from a reduction in interest are returned to the private sector as transfer payments financed by printing money. A corresponding statement holds, *mutatis mutandis*, for capital losses.

¹¹ See, for example, top of page 29; see also the discussion in footnote 20, below.

¹² This distinction is quite clearly made in the Mathematical Appendix, especially on page 320. But unfortunately there is no communication between the appendix and the text on this crucial point.

functions; but this in no way affects the fact that, in back of system (14)-(16), lies a system like (5)-(8) in which the individual demands and supplies for financial assets remain the *dependent* variables of the analysis. Though it is necessarily the net-money doctrine which is relevant for considerations of the wealth effect on demand functions, it is equally necessarily the gross-money doctrine which is relevant for considerations of the optimum amount of money which an individual wishes to hold in his portfolio. There is no contradiction between these two "doctrines": they simply refer to two completely different things.¹³

It should be emphasized that there is nothing unusual about this distinction: thus, consider the familiar case of an economy consisting of individuals who receive their income in the form of initial endowments of two commodities, x and y . If we abstract from distribution effects, the demand functions of this economy depend upon (among other things) the *aggregate* value of the initial quantities of x and y (i.e., total income); but this in no way affects the fact that the economy has *separate* demand functions for x and y . This example brings out the further point that the net-money doctrine does not represent an additional and optional assumption, but is the logical consequence of assuming at one and the same time that (a) the demand of an individual depends on his total wealth and (b) there are no distribution effects. G-S explicitly accept the second of these assumptions—and give no indication of rejecting the first. Hence, if they are to be consistent, they themselves cannot reject the net-money doctrine.

From all this it is clear that, contrary to the contentions of G-S, the net-money doctrine does *not* imply that an economy with only inside money is "money-less and bond-less" (p. 138), so that its price level is indeterminate (pp. 142-44). Indeed, the determinacy of such a system is immediately evident from equations (14)-(16) above. For though an arbitrary (say) increase in p will not affect any of the *demand* functions in this system, it will, by decreasing $\frac{M_0}{p}$, create an *excess* (or, in G-S's terminology "incremental") demand for money; alternatively, it will create an excess supply of bonds. This will increase i , thereby [from (14)] create an excess supply of commodities, and thereby drive the price level down again.

This is how the "traditional argument" would be stated. It can also be stated, in G-S's conceptual framework, in terms of the fact that the increased price level disturbs the portfolio equilibrium of the private sector by decreasing its real money holdings relative to its bond holdings, and that the attempt of the private sector to re-establish equilibrium will cause the system to return

¹³ At one point (p. 320, top), the Mathematical Appendix does write the demand functions as dependent upon total financial assets. But this procedure is not carried over to other parts of the appendix—and its implications for the argument of the text are not seen.

On my own confusion on related points in earlier writings, see footnote 3 above.

¹⁴ Pp. 74-75, 79, and 143. There is some confusion in G-S's presentation of the argument. For they assume that the amount of bonds firms supply goes up proportionately with the price level, and state that such an assumption is necessary in order "to avoid distribution effects" (p. 75). Now, first of all, by G-S's own assumption as to the be-

to its original position.¹⁴ This may be a more sophisticated way of describing the matter, but it certainly does not differ substantively from the argument of the preceding paragraph. And there is certainly no basis for G-S's contention that the "net-money doctrine overlooks the bearing of portfolio balance on real behavior" (p. 144).

I would conjecture that what misled G-S in all this discussion is the fact that the *demand* functions of a purely inside-money economy are independent of the absolute price level (note their emphasis on this fact on pp. 73-74). From this (I suspect) they incorrectly inferred that the system of equations of such an economy is ensnared in the price indeterminacy of the invalid dichotomy. They did not realize that what involves a system in such a dichotomy is instead the quite distinct assumption that all (nonmoney) *excess demand* functions are unaffected by the price level. And they particularly did not realize that, as shown by equations (14)-(16), a purely inside-money economy is actually a particular instance of the special case in which the system can be validly dichotomized by virtue of the fact that, though the commodity excess-demand equation is independent of the price level, the bond excess-demand equation is not.¹⁵

Looking at the inside-money model in this way also enables us quite simply to deduce one of G-S's main conclusions: namely, that open-market purchases in such a model (i.e., government acquisition of private securities) will not affect the rate of interest. Equation (14) shows us that, under the assumption of full employment, there is only one rate of interest at which the commodity market can be in equilibrium. Hence nothing that happens in the bond or money markets alone can affect the equilibrium rate of interest. Once again, we can equivalently carry out the argument—as G-S do—in terms of "portfolio balance" (pp. 76-77). But in this case I believe that the G-S argument is less revealing than the "traditional one": for it fails to bring out the crucial nature of the dichotomy between the real sector and monetary sector which is implicit in the assumption of a purely inside-money economy.

By way of contrast, consider the case in which there is both inside and outside money, so that the more general system (10)-(12) obtains. It is immediately evident that the commodity market in this case can be in equilibrium at an infinite number of combinations of interest rate and price level. Hence the

havior of firms (pp. 63-64), an increase in the price level will *not* cause a proportionate increase in the supply of bonds—for it will have an encouraging "debt effect." Secondly, as shown above, what is necessary for the argument is that the *excess demand* function for bonds be free of distribution effects—and this can obtain even if the amount of bonds outstanding remains constant. For, as emphasized in equation (9) above, all that absence of distribution effects means is that the indebtedness effects of firms and households offset each other.

This confusion recurs throughout G-S's book (cf., e.g., pp. 88, 234 and 251). They may, of course, be thinking of changes in the *initial* quantities of bonds. But since, as just emphasized, they do not distinguish properly between initial and demanded quantities, their argument is not clear.

¹⁴ See *Money, Interest, and Prices*, pp. 109-10. The validity of dichotomizing the system in this case has recently been emphasized by Franco Modigliani in the postscript attached to the reprinting of his well-known article on "Liquidity Preference and the Theory of Interest and Money" in *The Critics of Keynesian Economics*, ed. H. Hazlitt, Princeton 1960, pp. 183-84.

equilibrium condition in this market does not uniquely determine the rate of interest, so that there is room for changes in the interest rate to result from changes originating in the bond or money markets (the monetary sector). In particular, an increase in outside money in this case will *raise* the interest rate (pp. 85-86)¹⁶ while an increase in inside money will *lower* it (pp. 84-85, 144-47). On the other hand—as the reader can readily verify from system (10)-(12)—a proportionate increase in both inside and outside money will cause a proportionate increase in prices and leave the interest rate invariant (p. 85).

Two comments must be made here. First—and related to our earlier discussion—the open market purchase of bonds in the preceding case does not *initially* (i.e., before the interest rate change) affect the net obligation of the government to the private sector as represented by equation (4) above; correspondingly, it does not initially affect the *demand* functions in system (10)-(12). But by generating corresponding increases in B_0^* and M_0 , it does create an *excess* demand for bonds and an *excess* supply of money—thus driving the interest rate down. In this way we see the untenability of G-S's contention that the "net-money doctrine . . . implies that management of inside money cannot come to grips with the rate of interest" (p. 147).

My second comment is more a question of emphasis. G-S have done a real service in making explicit the distinction between inside and outside money. At the same time I think it is unfortunate that they have chosen to refer to the foregoing results as proving "that money is not neutral, within a neo-classical framework, when there is a combination of inside and outside money" (p. 232). For G-S repeatedly recognize that the "neo-classical framework" implies the absence of distribution effects—which means, among other things, that the increased money supply is injected into the system so as not to disturb "the pattern of demand for current output" (p. 41). Why, then, is there any essential difference between this and assuming that the money is injected so as not to disturb the pattern of demand for financial assets? And is it not this latter condition that we are implicitly fulfilling when we assume that the monetary increase is accomplished in such a way as not to disturb the proportions between inside and outside money?

Before concluding this section I must voice a more fundamental objection, though not to an analytical aspect of the book. G-S have explicitly adopted the procedure of "no footnotes and no bibliography" (p. x). There is much to be said for such a procedure. But it would seem to me that the "ground rules" (to use one of the G-S's pet phrases) of scholarship then require the authors to foreswear the pleasures of *Dogmengeschichte*, and particularly the pleasures of casting anonymous shafts at "traditional" and "neo-classical" economics. Unsupported *obiter dicta* on the nature of the latter can only add confusion to an already complicated issue.

Thus I for one would have been much happier not to have been unequivocally told, with respect to an economy all of whose money is of the inside variety, that "the traditional answer would be that the price level is not

¹⁶ This rather surprising conclusion results from the assumption that the government is a creditor of the private sector. If it were a debtor, interest would fall. See Enthoven's analysis, pp. 330-33. See also *Money, Interest, and Prices*, ch. 12, sec. 5, and Mathematical Appendix, 9: e.

determinate, and that any price level would be compatible with general equilibrium" (p. 74); or that "the quantity-theory solution"—for the case of an increase in inside money when there exists money of both varieties—is "a new equilibrium at doubled levels of commodity prices, money wage rates, and nominal primary securities—with the rate of interest unchanged" (p. 145; see also p. 147). And I would have been happiest to have been informed who were the culprits responsible for such statements, and how far back in the literature one has to go in order to find signs of their activity.

III. *The Influence of Financial Intermediaries*

Within the confines of one book G-S have admirably transformed the analysis of financial intermediaries from a hitherto neglected question in the literature to one which will now have a recognized place in the corpus of monetary theory. My only objection to their analysis is that it is not sufficiently integrated into this corpus, and that as a result its full significance is not brought out. This is what will now be shown. At the same time it should be made clear at the outset that from the substantive viewpoint the following merely repeats G-S's analysis. It gives it only a slightly different twist—a slightly different emphasis. But it seems to me that this emphasis is of importance in simplifying and clarifying the analysis.

G-S fruitfully conceive of financial intermediaries (especially of the non-banking type) as processing plants whose function it is to "turn primary securities into indirect securities for the portfolios of ultimate lenders" (p. 197). Intermediaries are able to profit by this transformation process by exploiting "economies of scale in lending and borrowing. On the lending side, the intermediary can invest and manage investments in primary securities at unit costs far below the experience of most individual lenders. The sheer size of its portfolio permits a significant reduction in risks through diversification. It can schedule maturities so that chances of liquidity crises are minimized. The mutual or cooperative is sometimes favored with tax benefits that are not available to the individual saver. On the borrowing side, the intermediary with a large number of depositors can normally rely on a predictable schedule of claims for repayment and so can get along with a portfolio that is relatively illiquid" (p. 194).

In other words, the result of developing nonbanking financial intermediaries (like that of improving distributive techniques) is to provide ultimate lenders with the possibility of purchasing a security which is more attractive (more "liquid") than the primary securities issued by the ultimate borrowers (pp. 123-26). If G-S had followed up this aspect of their argument, they could have simply and instructively presented it as analytically equivalent to the case of an assumed increase in the liquidity of bonds within a standard Keynesian model. Such an increased liquidity makes bonds a better substitute for money, and thus causes the demand curve for money both to shift leftwards and to become more elastic. This is represented by the shift from D to D' in Figure 1, which essentially reproduces G-S's Charts 5 (p. 163) and 8 (p. 216). It follows that if the real supply of money remains constant at OC , then the rate of interest must decline from i_1 to i_0 .

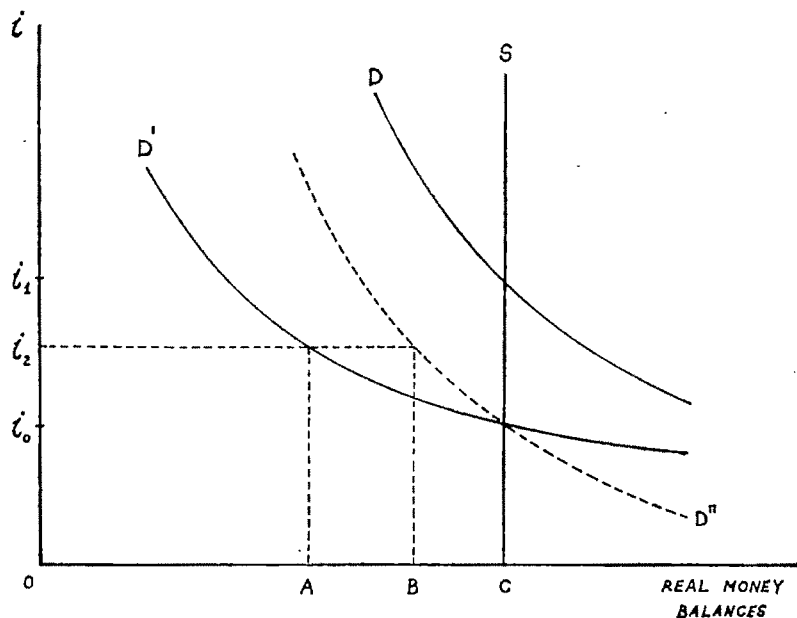


FIGURE 1.

This, within the familiar framework of Keynesian theory, is the why and wherefore of the influence of financial intermediaries on the rate of interest, and thence on the real variables of the system. And within this same familiar context G-S could also have simply, succinctly, and systematically placed their analysis of an assumed greater marketability of securities, or smaller risks of default, or a shift in the "mix" of securities in favor of shorter-term obligations (pp. 160-73); or of government's substituting its securities for private ones, or insuring the latter (pp. 224-27); or of government's decreasing the liquidity of bonds relative to money by insuring the latter (pp. 225-26; this, of course, would reflect itself as an opposite shift—from D' to D). In a similar way, we can see from the diagram that if the monetary authority wishes to raise the interest rate from i_0 to i_2 by open-market sales, then it must decrease the real money supply much more in the case of the elastic demand curve D' , which characterizes a system with nonbanking financial intermediaries, than in the case of the less elastic curve D'' , which characterizes a system without them (pp. 239-41, 286).

Note that implicit in the foregoing exposition is the assumption that financial intermediaries are just that: namely, that they do not themselves change their money holdings in carrying out the full cycle of their activities. This, it seems to me, is the way the analysis should be carried out. Correspondingly, it also seems to me that G-S's attempt to achieve formal completeness of the argument by using as one of their standards of comparison a case in which intermediaries hoard money (pp. 217-18) simply confuses the nature of the real issues involved.

Finally, I should emphasize that in order to keep the foregoing exposition as close as possible to G-S's, I have carried it out in terms of the demand for and supply of money. Actually, however, I would have preferred to have carried it out in terms of a simultaneous general-equilibrium analysis of the commodity, bond, and money markets together. In particular, a parameter, t , can be introduced into each of the demand functions in system (10)-(12) to represent the degree of liquidity of bonds. An increase in t can be assumed to increase the demand for bonds, decrease that for money, and have either a positive or negative effect on that for commodities. This would have insured that we would not lose sight—as G-S sometimes do¹⁷—of the concomitant happenings in the commodity market as changes occur in those for bonds and money.

In this way it would also have been possible to bring out G-S's frequently emphasized point of the essential similarity between banking and nonbanking intermediaries (see Section I above). To speak somewhat loosely, both of these intermediaries influence the economy by affecting the terms on which bonds are demanded and supplied. But, in terms of the bond equation (11) above, the banking system does this by (say) increasing the second component of this demand $\left(\frac{B_o^g}{ip}\right)$; whereas nonbanking intermediaries, by increasing the liquidity of bonds, and hence t , do so by increasing the first component $[B(\quad)]$. Alternatively, in somewhat more familiar terms, we can make the comparison in terms of the money equation (12) and say that the banking system affects the economy by changing the supply of money $\frac{M_o}{p}$; whereas nonbanking intermediaries do so by changing t , hence the demand for money $L(\quad)$, and hence the velocity of circulation. Note, however, that in both cases there are further endogenous changes in velocity caused by the change in the interest rate.

IV. *The Minimum Requirements of a Monetary System*

G-S have reserved their most provocative question of all for their concluding chapter. Here they ask: What are the minimum prescriptions a monetary authority must set in order to assure the determinacy of the price level in a monetary system? Alternatively, and somewhat more pointedly, I would prefer to ask the question in the following way: In most discussions of monetary theory the nominal quantity of money supplied is taken as an exogenous variable. But though we continuously shy away from this fact in our theoretical work, we do nevertheless know that in the real world this is not the case:

¹⁷ I am thinking primarily of G-S's discussion on pages 153-58, which is based on the tacit assumption that the total demand for financial assets remains fixed. This discussion is then used as the basis for analyzing changes in the maturity of bonds, in their degree of risk, and so forth (pp. 159 ff.)—despite the fact that all of these changes will in general also affect the demand for commodities and hence the total demand for financial assets.

Note, too, that in their discussion of financial intermediaries, G-S explicitly assume "that there is no change in spending units' demand for current output" (p. 214, n. 3).

for money is largely the creature of a banking system which responds to such endogenous variables as the rate of interest, the wages of clerks, and so forth. How then can we take account of these responses? And, in particular, is there a limit to the extent to which such endogenous influences can be assumed to operate? Conversely, must a determinate monetary system necessarily retain some exogenous element?

One cannot read G-S's concluding chapter without being struck by the success with which the authors have refreshingly broken through the traditional confines of thought, and by the fruitfulness with which they apply their analytical apparatus to problems of banking theory. But once again their exposition is marred by imprecisions and errors, and by a consequent failure to see the full and deeper significance of the argument.

G-S's discussion of this question is carried out almost entirely in terms of the purely inside-money model. They begin by introducing two new assumptions: first, that the banking system pays an "explicit deposit rate," d , on the money which it has issued (e.g., on its demand deposits); second, that the behavior of the banking system, like that of any other sector, is free of money illusion—i.e., that it is determined only by real variables (pp. 248-57).

Introducing the first of these changes into the inside-money system (14)-(16) above converts it into:

$$(17) \quad F(Y_0, i, d) - Y_0 = 0 \quad \text{commodities,}$$

$$(18) \quad B(Y_0, i, d) + \frac{M_0}{p} = 0 \quad \text{bonds,}$$

$$(19) \quad L(Y_0, i, d) - \frac{M_0}{p} = 0 \quad \text{money.}$$

In other words, in formulating their demand decisions in this economy, individuals take account of the rate of return on the asset money (d), as well as the rate of return on the asset bonds (i).

It is immediately evident that the foregoing system is indeterminate. For assume that we begin from an initial equilibrium position with d at a certain level, and that d is then increased. This is analytically equivalent to an increase in liquidity preference: money balances become more desirable at an unchanged rate of interest. Hence the system will reach a new equilibrium position which will reflect this shift in liquidity preference. It will not return to the original equilibrium position (pp. 248-52).¹⁸

G-S, however, assume that the new equilibrium position differs from the original one only in the price level, while the rate of interest remains the same. This results from their assumption that the foregoing shift in liquidity preference is a neutral one as between bonds and commodities (p. 252). This assumption, however, is quite unreasonable within the given context. For the change in d primarily affects the relative desirability of bonds and money as liquid assets. Correspondingly, the shift in liquidity preference which takes place is primarily at the expense of bonds—and little, if at all, at the expense of commodities. Hence such a shift causes a permanent increase in the interest

¹⁸ In technical terms: system (17)-(19) has three variables— i , d , and p , and (by Walras' Law) only two independent equations. Hence it is generally indeterminate.

rate,¹⁹ even when money is entirely of the inside variety. G-S do recognize this as a possibility (p. 252, bottom); but they do not see that this is what should normally be expected to happen.

Let us now proceed to G-S's second change—namely, that the quantity of money is no longer the exogenous variable that it is in system (14)-(16), but an endogenous one determined by the profit-maximizing behavior of the banking system. In brief, we now have a money-supply function of the banking system (which is simultaneously its bond-demand function) that states (and here I differ from G-S²⁰):

$$(20) \quad \frac{M}{p} = S(i, d).$$

More specifically, the real amount of money the banking system wishes to supply (the real amount of bonds it demands) depends directly on the interest rate it receives and inversely on the deposit rate it pays. Substituting this into (17)-(19), we obtain:

$$(21) \quad F(Y_0, i, d) - Y_0 = 0,$$

$$(22) \quad B(Y_0, i, d) + S(i, d) = 0,$$

$$(23) \quad L(Y_0, i, d) - S(i, d) = 0.$$

Now, it is reasonable to assume that this system of two independent equations can determine the equilibrium values of its two variables, i and d . However, it clearly cannot determine the equilibrium price level (p. 255). This is obvious from the fact that p does not even appear as a variable of the system. Due to the incorrect way in which they write the money-supply function—a way in which p does ostensibly appear in the function²¹—G-S do not realize this crucial fact. Nor, accordingly, do they realize the full significance of the foregoing indeterminacy. This, in brief, is that in order for the absolute price level to be determined by market-equilibrating forces, changes in it must impinge on aggregate *real* behavior in *some* market—i.e., must create excess demands in some market. Now, the joint assumptions of a purely inside-money and the absence of distribution effects implies that there is no such impingement on the real demands of the private sector for commodities, bonds, or money, respectively. Similarly, we have assumed that there is no impingement on the real demand and supply functions of the banking sector. Hence the economy does

¹⁹ *Money, Interest and Prices*, pp. 169-70.

²⁰ G-S write this function (p. 254) as:

$$\frac{M}{p} = S\left(\frac{B^e}{ip}, i, d, \frac{w}{p}\right).$$

For simplicity, the argument w/p —representing the real wage rate—has been omitted here in accordance with the assumption (made by G-S as well) that the labor market is always in equilibrium. On the other hand, G-S's inclusion of B^e/ip as an argument of the function is not explained by them—and seems to me again to reflect their failure to distinguish properly between dependent and independent variables (see Section I above). For by the inside-money assumption, $B^e/ip = M/p$, so that what G-S have essentially done is to write a supply function in which the same variable, M/p , appears simultaneously as a dependent and independent variable! This confusion has consequences for their later argument which will be noted in a moment.

²¹ See preceding footnote.

not generate resistance to any arbitrary change in the price level. Accordingly, there is nothing to prevent the frictionless flow of prices from one level to another.

G-S now move one step closer to reality and assume that there is a central bank which creates reserves solely by purchasing primary securities. Reserves are thus a type of security issued by one financial intermediary (the central bank) and, by assumption, acquired only by another (member banks) (pp. 257-58). In terms of the sectoral balance sheets of Table 1 above, this means that though there is no effect on the household and business sectors, the government and monetary sector is now divided into two sectors, as in Table 2.²²

TABLE 2—SECTORAL BALANCE SHEETS—MEMBER BANKS AND CENTRAL BANK

Member Banks		Central Bank	
Reserves 25	Money 100 (demand deposits)	Bonds 25 (primary securities)	Reserves 25
Bonds (primary securities) 75			

It is further assumed that like any other security, reserves, too, provide a rate of return, namely, the "reserve-balance rate," d' . It is first assumed that member banks are not subjected to reserve requirements. Instead, they are free to choose their optimum portfolio of assets and liabilities—including, of course, reserves. Like any other economic unit, the private banking system's optimum portfolio depends only on real variables—and, in particular, on the alternative rates of return of the three assets (and liabilities) on which it must formulate its decisions: namely, i , d , and d' . Thus the private banking system's real supply function of money is now assumed to be:

$$(24) \quad S(i, d, d'),$$

and its real demand function for reserves,

$$(25) \quad G(i, d, d').^{23}$$

At the same time, the private banking system's supply of money is clearly no longer identical with its demand for bonds. The latter is instead now represented by, say $U(i, d, d')$ where, by the banks' balance sheet of Table 2,

$$(26) \quad U(i, d, d') \equiv S(i, d, d') - G(i, d, d').$$

On the other hand, the central bank's real supply of reserves, which is also its real demand for primary securities, is:

$$(27) \quad \frac{R}{p},$$

²² Because of the assumption that all money is inside money, Table 2 disregards the 75 units of outside money in Table 1.

²³ Once again, these equations differ from those of G-S (pp. 258-59) for the same reason noted in footnote 20 above. Note in particular that G-S's money-supply function depends on B_o'/ip , equal to members' reserves (p. 258). But, as we have just seen, this is quite wrong: for reserves demanded and money supplied are both dependent variables—dependent on the same three variables, i , d , and d' .

where R is the nominal quantity of reserves. Correspondingly, system (21)-(23) becomes:

$$(28) \quad F(Y_0, i, d) - Y_0 = 0 \quad \text{commodities,}$$

$$(29) \quad B(Y_0, i, d) + U(i, d, d') + \frac{R}{p} = 0 \quad \text{bonds,}$$

$$(30) \quad L(Y_0, i, d) - S(i, d, d') = 0 \quad \text{money,}$$

$$(31) \quad G(i, d, d') - \frac{R}{p} = 0 \quad \text{reserves.}$$

G-S summarize their argument in the following terms: "Of three indirect techniques—fixing nominal reserves [R], setting the reserve-balance rate [d'], and setting members' own deposit rate [d —the Central Bank can get along with any two in regulating all nominal variables in the economic system" (pp. 274-75); and G-S themselves concentrate on showing how the system works when the first two are chosen (pp. 259-63). At the same time they contend that a central bank that can only regulate the reserve-balance rate, d' , is in a weaker position than a monetary authority that can "directly" regulate the deposit rate, d (pp. 263-64).

These passages reveal G-S's failure to understand two basic aspects of the argument. First, and most important of all, it is *not* a matter of indifference to the central bank as to which two of the three variables— R , d' , or d —it chooses to fix. The decision on R is *not* analogous to the decision on d or d' . Indeed, unless the central bank makes a decision on R (though not necessarily the one indicated by G-S) it can not achieve a determinate price level.

In order to show this, let us for the sake of contrast first assume that the central bank, too, is influenced only by real variables. Then, instead of (27), its real supply function of reserves would be represented by, say,

$$(32) \quad T(i, d').$$

Replacing $\frac{R}{p}$ by this expression in system (28)-(31) would then yield a system completely analogous to (21)-(23) above: namely, one that could determine the rates of return, but obviously not the price level, which would not even appear in it!

In terms of our earlier argument, all that this means is that since in the aggregate no other economic unit in system (28)-(31) reacts to changes in the absolute price level, then, in order to assure the determinacy of the price level, the central bank must do so. This is the behavior denied by equation (32) but affirmed by equation (27). For the latter implies that the supply of real reserves is inversely proportionate to the price level. On the other hand, it is clear that the central bank need not operate in this way. If it acts in accordance with any supply function for *real* reserves which is dependent on the absolute price level—say,

$$(33) \quad W(i, d', p)$$

—the same purpose will be accomplished. In brief, a necessary and sufficient condition for the price level to be determinate in the foregoing inside-money

model is that the central bank be willing to suffer from money illusion in one form or another! This is the essential point.²⁴

From this we move to our second criticism. Once it has decided to fix the level of nominal reserves [or, more generally, act in accordance with (33)], the central bank uniquely determines all the variables of the system by fixing in addition either one of the two rates d or d' —or for that matter (though G-S do not realize this) any one of the three rates d , d' , or i . Hence at the theoretical level at which G-S are carrying on their discussion it cannot make a particle of difference which rate is so fixed. Accordingly it is meaningless to say that a monetary authority that can choose d is in a "stronger position" than one that can only choose d' .

The general conclusion that we can draw from all this is that, in the absence of distribution effects, the necessary conditions for rendering a monetary system determinate is that there be an exogenous fixing of (1) some nominal quantity and (2) some rate of return. It follows that if we were to extend the argument to an economy with both inside and outside money (something G-S do not do) it would suffice to fix the quantity of outside money and its rate of return (say, at zero). In such an economy the price level would be determinate even if the central bank were to fix nothing, and operate solely in accordance with the principle of profit-maximization [as represented, say, by equation (32)]—subject to the restriction that the quantity of outside money is fixed.

It is, therefore, unfortunate that G-S have so strongly tied their discussion of central bank policy with that of the conditions necessary to achieve a determinate price level. As can be seen from what has just been said, this is not the real issue at all. Instead, the analysis of central bank policy should concentrate on the behavior (obviously, of a non-profit-maximizing type) such a bank can adopt with reference to such decisions as (say) open-market purchases of bonds in order to bring about *desired* changes in a *determinate* price level and in other variables of the economic system. But it would carry us too far afield to explore these questions in any further detail here.

²⁴ This presentation enables us to solve a seemingly paradoxical aspect of G-S's argument. They emphasize that a system with competitive banks—but no central bank—is determinate in its rates of return but not in its price level. On the other hand, the introduction of a central bank renders the system indeterminate both in rates of return and the price level. This raises the puzzling question: Why should the introduction of one new equation (for reserves) and one new variable (d') make the indeterminacy so much greater?

But what we now see is that G-S's first system corresponds to (21)-(23), in which the "indeterminacy" of the price level is just a complicated way of saying that this variable does not appear in the system at all. Instead, there exists a system of two (independent) equations in two variables (i , d). And as just noted in the text, we would get exactly the same type of "indeterminacy" if we were to introduce the central bank in the illusion-free way described by equation (32).

On the other hand, once we assume that the central bank suffers from money illusion, we obtain a system like (28)-(31), consisting of three independent equations in four variables (i , d , d' , and p), each of which actually appears in the system. And since there is no reason to assume that this system has a determinate subsystem, indeterminacy prevails in all the variables. This, of course, is also characteristic of system (17)-(19), to which system (28)-(31) is essentially similar.

COMMUNICATIONS

The Reform and Revaluation of the Ruble

This note is an analysis of the Soviet currency reform and exchange rate change effective on January 1, 1961.¹ An understanding of the currency reform is essential to a proper assessment of the revaluation as a depreciation, rather than as an appreciation (as claimed by Soviet officials), of the ruble.

I. The Currency Reform

The currency reform was announced by Khrushchev in a speech to the Supreme Soviet on May 5, 1960, and an official decree was published in the Soviet press the following day [9]. Beginning January 1, 1961, a new ruble currency will be issued at the rate of 1 new ruble for 10 old rubles.² Also, effective January 1, 1961, all prices, wages and other money incomes, taxes, savings deposits, government bonds, and assets and liabilities of Soviet enterprises are to be reduced to one-tenth of their former level.³ The currency reform will thus have no real impact on the average Soviet citizen, whose real income and real asset positions will be unaltered as a result of the change, in the same proportion, of wages, prices, assets, and claims.⁴

In this respect, the 1961 reform differs from the early post-war monetary reform of December 1947. Under the latter, new currency was exchanged for old at the rate of 1-to-10; savings deposits were exchanged at varying rates, ranging from 1-to-1 for small deposits to 1-to-2 for large deposits; and government bonds, with some exceptions, were exchanged at a rate of 1-to-3. On the other hand, wage rates were unchanged while prices were reduced, although not in proportion to the reduction in the population's holdings of currency and near-money.⁵ The primary objective of the 1947 reform was thus to wipe

¹ This note was written at the end of November 1960 and is based on information available at that time.

² The exchange of notes and coins is to be completed within three months, i.e., by April 1, 1961. In the interim, old notes and coins will be accepted for all payments at one-tenth their face value.

³ Since the minimum unit will continue to be the kopeck, now the smallest coin in circulation, the new prices will be rounded up or down to the nearest kopeck. (100 kopecks equal 1 ruble.) For example, a 35 kopeck price will become 4 kopecks and a 34 kopeck price, 3 kopecks. As an exception to this general rule, all rounding will be downward in the case of certain mass consumption goods, such as bread, milk and dairy products, and selected articles for children.

⁴ The Soviet currency reform thus resembles closely the French currency reform effective January 1, 1960, which substituted 1 new "heavy" franc for 100 old francs, and may have been inspired, at least in part, by the French reform.

⁵ Concurrently with the monetary reform, rationing was ended, and new retail prices were fixed at a level intermediate between the previous low "ration" prices and the higher "commercial prices" at which off-ratio purchases could be made. The new retail price level

out inflationary pressure arising from large cash balances accumulated during the second world war as a result of wartime deficit finance and held to a large extent by peasants who had obtained high prices on the free market for scarce food during the war [12, pp. 478-80]. Real incomes were favorably affected, however, as a result of the general price reductions accompanying and following the 1947 monetary reform, while money wages were unchanged by the reform and rose gradually thereafter [8].

In contrast, the 1961 reform is not intended to eliminate currency hoards,⁶ nor are general price reductions promised. Indeed, in the same speech in which the currency reform was announced, Khrushchev specifically reiterated the present Soviet policy of granting increases in real income primarily through selective increases in money income (and, through differential reductions in income taxes deducted at the source, in the take-home component of gross wages), while keeping the general level of retail prices relatively stable, as it has been since 1954 [9].

Thus the currency reform itself will have no significant impact on the Soviet population or on the Soviet economy. Surely the claimed advantages from the simplification of bookkeeping, greater attention to economizing every ruble and kopeck, and reduced expenditures for printing money (aside from the necessary initial issue) [9] are of minor significance. Although there may be some favorable psychological impact of a "more valuable" ruble on the population and on enterprise managers and workers, its importance is questionable.

II. *The Revaluation of the Ruble*

The establishment of a new gold content and exchange rate for the ruble was decreed on November 14, 1960 [11], six months after the announcement of the currency reform, although it was foreshadowed by a clause in the May currency reform decree stating that the Ministry of Finance, the State Planning Committee, and the State Bank had been "instructed to draft proposals for establishing a new rate of exchange between the ruble and foreign currencies and for raising the gold content of the ruble" [9].

On February 28, 1950, the USSR had fixed the gold content of the ruble at .222168 grams of fine gold. With the par value of the U.S. dollar fixed

was apparently below the weighted average of the "ration" and "commercial" prices, although the available data are not very clear on this point [8, pp. 39, 46]. Retail prices were subsequently reduced in the spring of 1948, and each spring thereafter through 1954, as output and supplies of consumer goods increased. However, wholesale prices of consumer goods and prices of producer goods were not altered until 1949, and agricultural procurement prices were not substantially changed until 1953.

⁶ Although new currency is to be exchanged for old without limit at the specified rate, the reform will strike at those who have accumulated large currency hoards through "speculation" (i.e., black market) and other illegal activities and who will be loath to present them for exchange, because they will be unable to account satisfactorily for the size of their currency holdings. According to the Soviet press, such people have been endeavoring to convert their currency hoards into other assets, such as foreign currencies purchased from foreign visitors, precious metals, and jewelry. Thus, for instance, the Soviet jewelry trade organization is reported to have fulfilled its annual sales plan for 1960 in less than seven months. [14] Likewise, the comparatively small amount of ruble notes held outside the Soviet Union will become invalid as a result of the currency reform.

at .888671 grams of fine gold (equivalent to \$35.00 per troy ounce of fine gold), the exchange rate between the ruble and the dollar was accordingly set by the Soviet government at 4 rubles per dollar or \$0.25 per ruble. As a result of the 1961 currency reform, by itself, the gold parity for the new ruble should have been set at 10 times the gold parity of the old ruble, given the conversion ratio of 1 new for 10 old rubles. Thus, the gold parity should have been 2.22168 grams of fine gold per ruble, yielding an exchange rate with the dollar of 40 kopecks per dollar or \$2.50 per ruble. Instead, however, under the November 14, 1960 decree, the gold parity of the ruble is set, effective January 1, 1961, at .987412 grams of fine gold, and the exchange rate between the ruble and dollar, correspondingly, at 90 kopecks per dollar or \$1.11 per ruble. Thus, the gold parity and exchange rate with the dollar have been fixed at 44.4 per cent of the level which the currency reform alone should have produced, representing a sharp devaluation of the ruble, rather than an appreciation, as claimed in official Soviet statements (e.g., by Finance Minister Garbuzov [11]).⁷

There is, however, one respect in which the ruble will in fact be appreciated on January 1, 1961. In addition to the basic exchange rate of 4 rubles per dollar, used for the conversion of foreign currency in merchandise transactions, the Soviet State Bank also established, on April 1, 1957, a special rate of 10 rubles per dollar (and corresponding rates with other currencies) for "noncommercial" transactions, such as expenditures of diplomatic missions; the sale of rubles, in exchange for foreign currency, to foreign travelers visiting the Soviet Union; and the sale of foreign currency, in exchange for rubles, to Soviet citizens traveling abroad [13, pp. 98-99]. As a result of the currency reform alone, the corresponding rate should have become 1 ruble per dollar, given the conversion ratio for exchanging new for old rubles. Instead, effective January 1, 1961, this special "premium" rate will be abolished, and these transfers will be made at the new single rate of 90 kopecks per dollar or \$1.11 per ruble. Thus, for these transactions, the combination of the currency reform, the exchange-rate change, and the elimination of the special rate will cause an 11 per cent appreciation of the ruble.

This limited appreciation of the ruble constitutes the only immediate economic effect of the revaluation of the ruble, which will have no real economic impact either on Soviet foreign trade or on Soviet citizens and enterprises. There will be no direct impact on foreign trade because Soviet foreign trade is conducted at (or, as a result of bargaining, on the basis of) world market prices expressed in international currencies such as the dollar and the pound sterling. For statistical purposes, however, trade figures expressed in these foreign currencies are "translated" into rubles at the officially specified exchange rate, which on January 1, 1961, becomes 90 kopecks per dollar instead of 4 rubles per dollar. But the revaluation will not directly affect the volume, composition, or direction of Soviet foreign trade. Likewise, Soviet domestic prices will not be affected, because imports are sold within the USSR at internal ruble prices fixed in relation to the price structure for domestically

⁷ This devaluation will not, however, affect Soviet foreign trade for reasons explained below.

produced goods—rather than being sold at the ruble equivalent, at the official exchange rate, of the foreign price [7, pp. 435-36]. Hence, the depreciation of the basic exchange rate will not affect the Soviet trade balance nor the Soviet internal price level. The appreciation of the ruble in relation to those “invisible” transactions which formerly enjoyed the special favorable rate may tend to reduce foreign exchange earnings from this source, but it is not likely that the impact will be substantial.

A prestige or propaganda gain appears to be one of the major benefits sought through the revaluation. In explaining the revaluation [11], Finance Minister Garbuzov asserted that “in recent years the reputation of the dollar has been seriously undermined” by the United States’ adverse balance of payments, the accumulation of foreign-held dollar assets, and the loss of gold by the United States, as well as by the rise in the price of gold on the London gold market in October 1960. In contrast, he noted:

Our Soviet ruble is today the only currency in the world whose gold content has increased compared with the gold standard period when banknotes were exchanged freely for gold.

The setting of the ruble’s gold content at a level higher than the gold content of the dollar is a reflection of the major economic victories scored by our people under the leadership of the Leninist Central Committee of our Communist Party.

Raising the ruble’s gold content and establishing its exchange rate on the basis of its purchasing power will contribute to the further growth of the ruble’s international prestige and to insuring stability in international currency operations.

The depreciation of the ruble has thus been depicted as another achievement of the Soviet planned economy! This interpretation is abetted by the lapse of six months between announcement of the currency reform and the announcement of the revaluation of the ruble, and by the fact that neither in the decree announcing the revaluation nor in the lengthy accompanying statement by Garbuzov is any reference made to the currency reform (and proportional reduction in all internal prices) which will accompany the change in the exchange rate.

Garbuzov also claimed that:

The new rate of exchange of the ruble compared with the dollar conforms to the real relationship of the purchasing power of the currencies.

The new exchange rate of the ruble will make it possible to compare world prices with wholesale prices in the USSR, since, at this exchange rate, average world market prices will for the most part be brought to the level of average wholesale prices in the USSR. This will make it possible to estimate more correctly the relative profitability of the export and import of individual commodities and the profitability of the USSR’s foreign trade as a whole, and its trade with individual countries.

It is indeed true that the depreciation of the ruble will bring Soviet internal prices into closer correspondence with world market prices, converted into rubles at the new rate. This may be illustrated by comparing the official ex-

change rate with the relative purchasing power of the ruble and the dollar in regard to national product, before and after the 1961 revaluation. A rough calculation of this sort can be made with ruble-dollar ratios calculated for a study of Soviet and U. S. national product. However, one should keep in mind that the relative purchasing power of the ruble and dollar would, of course, be different for different "baskets" of goods and services than those in national product, e.g., those entering foreign trade.

Table 1 shows ruble-dollar ratios for national product and its principal components for 1955.^a For the purpose of the present analysis, these ratios may be considered sufficiently representative of the corresponding ruble-dollar ratios for 1960, inasmuch as the changes in Soviet and U. S. prices, and in

TABLE 1—RUBLE-DOLLAR RATIOS FOR GROSS NATIONAL PRODUCT AND ITS PRINCIPAL COMPONENTS

	1955 Ruble-Dollar Ratios ^a		Ruble-Dollar Ratios Resulting from Currency Reform ^b	
	<i>Soviet Weights</i>	<i>U. S. Weights</i>	<i>Soviet Weights</i>	<i>U. S. Weights</i>
Consumption	8	15	0.8	1.5
Investment	5	7	0.5	0.7
Defense	4	5	0.4	0.5
Government administration	2	2	0.2	0.2
<i>Gross National Product</i>	6	12	0.6	1.2

^a From [2, pp. 385-86], where sources and methods are explained.

^b One-tenth of the corresponding 1955 ratio.

the structures of the respective national products, from 1955 to 1960 were relatively modest.⁹ These ratios show that the official exchange rate of 4 rubles per dollar overvalued the ruble substantially for the consumption component and to a lesser extent also for the investment component, as well as for national product as a whole. The reduction of Soviet prices in 1961 to one-tenth their 1960 level will reduce the ruble-dollar ratios correspondingly, as shown in the table. The new exchange rate of 90 kopecks per dollar is much more consistent with the resulting ratios than was the relationship between the previous official exchange rate of 4 rubles per dollar and the ratios shown in the first two columns of the table. The degree of correspondence

⁹ Similar calculations and comparisons are made by Soviet government economists, although their results are not disclosed in the published Soviet literature [4, p. 109].

⁹ For example, if the ruble-dollar ratios for the consumption end-use are adjusted for the increase from 1955 to 1959 in the corresponding Soviet prices of about 1 per cent [15, p. 770] [16, p. 239] and in the corresponding U.S. prices of about 9 per cent [3], the Soviet-weighted ratio would be modified to 7, instead of 8, rubles per dollar and the U.S.-weighted ratio to 14, instead of 15, rubles per dollar. Soviet data to make similar adjustments for the ratios for the other end-uses are not available, but it is to be expected that these ratios would not be significantly modified, inasmuch as Soviet wholesale prices have not been substantially changed since 1955, while U.S. wholesale prices increased about 8 per cent from 1955 to 1959 [3]. For a discussion of the importance of considering the results with Soviet and U.S. weights separately, rather than taking a geometric average of the two sets of results, see [1].

between the new exchange rate and the second set of ruble-dollar ratios compares favorably with similar relationships calculated for eight Western European countries by Gilbert [5, p. 40]. In this respect, the new exchange rate for the ruble is more "realistic" than the old: it does more nearly "conform to the real relationship of the purchasing power of the currencies," at least in purchasing national product.

While the new rate will be more satisfactory than the old rate for national product comparisons, it is by no means evident that it will also make it easier for the Soviets to "estimate more correctly the relative profitability" of Soviet foreign trade. The obstacle to a more accurate estimate of the (strictly economic) benefits to the Soviet economy from foreign trade has not been the overvalued exchange rate, which could easily be corrected for in planning the volume and composition of Soviet foreign trade, but rather the irrational Soviet internal relative price structure, which does not properly reflect relative scarcities [6]. Therefore, unless the revaluation of the ruble is also accompanied or followed by a drastic revision of the wholesale price *structure* (as distinct from a simple reduction in all prices to one-tenth their former level, with no change in relative prices), the revaluation will make no contribution to solving the problem of planning foreign trade on a sound economic basis. It remains to be seen whether the revision of wholesale prices to be undertaken in 1961-62 [10] will produce a significantly more rational internal price structure.

To summarize, the revaluation of the ruble, taken in conjunction with the concurrent currency and price reform, constitutes a depreciation of the ruble, except in so far as a limited group of invisibles transactions is concerned, for which the rate will be appreciated. However, the revaluation will not affect either the domestic price structure or the volume and composition of foreign trade. The depreciation puts the ruble at a rate which is more "realistic" in terms of comparative purchasing power with the dollar than was the old rate. Although this may facilitate some international value comparisons, such as those of the size of national product, it will not make possible more rational (economic) decisions regarding foreign trade, so long as the irrationality of the Soviet internal wholesale price structure continues.

MORRIS BORNSTEIN*

REFERENCES

1. A. S. BECKER, "Comparisons of United States and USSR National Output: Some Rules of the Game," *World Politics*, Oct. 1960, 13, 99-111.
2. M. BORNSTEIN, "A Comparison of Soviet and United States National Product," *Comparisons of the United States and Soviet Economies*, Part II, pp. 377-95, Joint Economic Committee, 86th Cong., 1st Sess., Washington 1959.
3. *Fed. Res. Bull.*, Oct. 1960, 46, 1180.
4. L. I. FREI, *Mezhdunarodnye raschety i finansirovanie vneshnei torgovli*

* The author is assistant professor of economics at The University of Michigan. This paper is based in part on research supported by the Ford Foundation, whose assistance is gratefully acknowledged.

sotsialisticheskikh stran (International Accounts and Financing of Foreign Trade of Socialist Countries). Moscow 1960.

5. M. GILBERT AND ASSOCIATES, *Comparative National Products and Price Levels*. Paris 1958.
6. G. GROSSMAN, "Industrial Prices in the USSR," *Am. Econ. Rev., Proc.*, May 1959, 49, 50-64.
7. F. D. HOLZMAN, "Some Financial Aspects of Soviet Foreign Trade," *Comparisons of the United States and Soviet Economies*, Part II, pp. 427-443, Joint Economic Committee, 86th Cong., 1st Sess., Washington 1959.
8. M. C. KASER, "Soviet Statistics of Wages and Prices," *Soviet Stud.*, July 1955, 7, 31-51.
9. *Pravda*, May 6, 1960.
10. ———, July 17, 1960.
11. ———, November 15, 1960.
12. H. SCHWARTZ, *Russia's Soviet Economy*, 2nd ed. Englewood Cliffs, N.J., 1954.
13. A. M. SMIRNOV, *Mezhdunarodnye valyutnye i kreditnye otnosheniia SSSR (International Foreign Exchange and Credit Relations of the USSR)*. Moscow 1960.
14. "Soviet Hints Rich Cut Ruble Hoards," *New York Times*, Oct. 23, 1960.
15. Tsentral'noe statisticheskoe upravlenie, *Narodnoe khoziaistvo SSSR v 1958 godu*. (Central Statistical Administration, *National Economy of the USSR in 1958*.) Moscow 1959.
16. Tsentral'noe statisticheskoe upravlenie, *SSSR v tsifrakh v 1959 godu*. (Central Statistical Administration, *The USSR in Figures in 1959*.) Moscow 1960.

Some Comments on "Growth"

Output may "grow" either because inputs increase or because productivity (output divided by input) increases. The two kinds of growth are very different.

The growth of output has been slower in recent years. Between 1950 and 1955 the GNP in constant prices increased 23.5 per cent, or an average of 4.7 per cent a year. Between 1955 and 1959 the increase was 9 per cent, or an average of 2.25 per cent a year. It is quite tempting for those of us who have reservations regarding Federal Reserve policy to use the figures just cited as "proving" that tight money policy has been "stifling growth." Perhaps. But unemployment as a percentage of the civilian labor force was 5.5 per cent in 1959 and 4.4 per cent in 1955. Conceivably Federal Reserve policy may have slowed down the increase in inputs and therefore been responsible for the 1.1 per cent net increase in unemployment. But, if the increase had been eliminated so that the same percentage of the labor force had been utilized in 1959 as in 1955, the increase in the GNP over the period would hardly have been more than 10.2 per cent instead of 9 per cent, or an average of 2.55 per cent rather than 2.25 per cent a year.

What happened during the period is that the rate of increase in productivity declined significantly. If we take what appears to be the broadest possible

measure—constant dollar GNP per employed civilian worker—the increase from 1950 to 1955 was 17.6 per cent, or 3.5 per cent a year, but in the last four years the rise was only 4.6 per cent, or 1.15 per cent a year. If we allow for some reduction of hours, as derived from estimates by the Bureau of Labor Statistics, the increase is raised to 19.3 per cent, or 3.9 per cent a year, in the first period, and 6.5 per cent, or 1.6 per cent a year, in the second period. Both estimates show so drastic a decline that they almost certainly overestimate, due to statistical difficulties, what has occurred; but that productivity has declined significantly seems clear.¹

Thus to argue that Federal Reserve policy has “stifled growth” is in essence to argue that tight money has been responsible for the decline in the rate of increase in productivity, a contention that may be a little difficult to establish. Further, if we want to resume “normal” growth, what we primarily need is a program to step up the rate of increase in productivity, not one to bring about an increase in inputs. Again, the labor movement often demands rapid growth to absorb unemployment without specifying what the word means; but, if rapid growth were caused by a rapid increase in productivity, labor’s demand could be satisfied and unemployment might at the same time increase appreciably.

Because capital-output ratios have been relatively fixed in the past, it is often argued that we cannot “afford” to “grow” at, say, 5 per cent because “burdensome” capital formation of, say, 15 per cent would be required. But obviously, as many have pointed out, \$3 of capital formation does not guarantee a \$1 increase in output; the ratio has been relatively constant because the rate of increase in productivity has been relatively constant. We know little about the factors which determine the rate of increase in productivity, but it seems likely that research in all its aspects has been of major—perhaps even of overwhelming—importance. Between 1945 and the present time research expenditures increased from 1 to 3 per cent of the national income.² But rather more than half of all present research is the result of spending by the Defense Department and the Atomic Energy Commission primarily for the improvement of military hardware, and almost half of all research is done by two industries—aircraft and electrical equipment. Thus the civilian sector is responsible for less than half of all research, of which hardly less than two-

¹ Government purchases of goods and services increased from 14.2 per cent of GNP in 1950 to 18.6 per cent in 1955, with practically no change thereafter to 1959; it is possible that a shift such as this causes an exaggeration of the increase in constant dollar GNP—and therefore in the rate of increase in productivity during the first period. The Bureau of Labor Statistics, in any event, reports a very much smaller decline in the rate of increase of productivity in the private sector. It is possible that the increase in services as a percentage of personal consumption expenditures from 34.8 per cent in 1950 to 35.5 per cent in 1955 and 37.8 per cent in 1959 helps to explain the slower rate of increase in the second period. But all measures—including that of John W. Kendrick at the National Bureau of Economic Research—show some decline; and, if government purchases are included—as they should be, in my judgment, if we are to obtain a proper over-all measure of economic performance—it seems likely that the decline will turn out to be appreciable even when the statistical difficulties are solved.

² D. M. Keezer, “The Outlook for Expenditures on Research and Development During the Next Decade,” *Proc., Am. Econ. Rev.*, May 1960, 50, 355 ff.

thirds is for product development. (The Styling Laboratory is an important part of the Technical Center of a major automobile producer.) Thus no more than $\frac{1}{2}$ of 1 per cent of the national income is spent on both civilian applied research and total fundamental research, including the fundamental research financed by the military.

The difference between the private and the social returns from research is, in my opinion, immense. As additions to knowledge cannot be patented, there is little profit incentive for firms to undertake basic research; to benefit they must either try to keep the results secret or make them available to all competitors without charge. Moreover, even in the case of applied research, the patent system as presently operated permits private firms to receive, in my judgment, only a relatively small part of the social returns from such research. In fact, if research were carried on as a *separate activity*, it seems to me quite unlikely that it would be able to sell its output at a price sufficient to cover its cost of production. Very few are in the business of inventing; most research is carried on by or for companies with products to sell. Admittedly firms with products to sell are sometimes able to obtain additional returns if they can monopolize the superior products or processes that applied research is likely to provide. But such gains are almost certainly temporary, and the whole relationship between research spending and private returns highly erratic. Under the circumstances it seems clear that spending on basic and civilian applied research is well below the socially desirable level.

But suppose in some way or other we managed to triple our spending on both basic and civilian applied research by devoting to such research an additional 1 per cent of income. Such a sharply expanded research effort might appreciably reduce the capital-output ratio. Specifically, it is possible that an additional 1 per cent of income devoted to research might permit a 5 per cent growth in output with no more than 9 per cent of current production devoted to capital formation, reducing the total "burden" of rapid growth to 10 per cent of current production rather than the 15 per cent that might be needed if the capital-output ratio were to remain unchanged.

The fact that such a result is "possible" does not make it probable—much less certain; but surely the possibility deserves careful investigation. It is suggestive that the rate of increase in productivity in agriculture—the one area where government has concerned itself systematically with the performance of an industry—has been more rapid since the second world war than in any other area of the economy except electric utilities. Yet even as careful a student as Theodore W. Schultz has concluded that "the resources committed annually [to agricultural research] would have to increase very substantially before the rate of return from this stream of inputs would not exceed that obtained in production activities generally."⁸ If this is true of an area where the government *has* concerned itself with performance, what are likely to be the returns in other areas?

One alternative—which apparently is going to be adopted—is to liberalize depreciation allowances. Undoubtedly any increase in the rate of capital formation improves the average quality of the capital stock and, therefore, has

⁸T. W. Schultz, *The Economic Organization of Agriculture*, New York 1953, p. 113.

favorable repercussions on productivity. But few if any industries are today suffering from any shortage of capacity, so that the response to liberalization may well be small; certainly it is hard to believe that the expansion of capacity can be as rapid in the near future as it has been in the recent past.⁴ In any event—to sum up these comments in a single sentence—what we urgently need, as I see it, is not *more* capital of basically the same sort as we now have but significantly *better* capital embodying the improved technology that can be expected to result from an expanded program of research and development.

HENRY H. VILLARD*

⁴I would give the substantial increase in capacity—and therefore in competition—major credit for the decline in corporate profits as a percentage of the national income from 14.7 per cent in 1950 to 11.6 per cent in 1959.

* The author is professor of economics at the City College of New York.

Hospitalization Insurance and Hospital Utilization

In Dallas, Texas, in 1929, Justin Ford Kimball, executive vice-president of Baylor University, originated a plan whereby Dallas school teachers paid \$6 a year to the University Hospital and were extended hospital care without further charge [1, p. 5]. From this beginning grew Blue Cross plans, pioneers in the health insurance field. Commercial insurance companies became important sellers of health insurance after 1941. More recently, independent health plans such as those sponsored by trade unions and management have emerged. At least 1,150 different organizations provide voluntary health insurance today [2, p. 47].

At the end of 1957, about 121 million persons owned some form of hospitalization insurance. Ten years earlier the number was only 53 million [2, p. 41]. The growth and extension of medical care insurance shows no sign of slowing. Pressure upon the U.S. Congress to expand coverage among older persons is mounting.

What consequences may be expected from continuation of the trend toward more comprehensive medical care coverage? The answer is surely as complex as it is important; in the present paper we hope to shed some light on the matter and to suggest directions for further research. Specifically we report the results of a statistical study of the impact of extended hospitalization-insurance protection on the utilization of hospital services. Our objective has been to consider the questions of how and to what extent people are likely to react to an increase in the availability of prepaid hospital services. Implications of such findings for the social costs of expanded health care, whether under governmental or private auspices, should be clear.

I. *The Method and Setting*

Comparison has been made of the hospitalization experience of two large groups of persons before and after the extension of additional service to one of them. The two groups studied each consisted of between 700 and 900 subscribers (plus their dependents) to Blue Cross Hospital Care plans. The groups consisted of employees of firms in the same (service) industry; the firms were of similar size, and were located only a short distance apart in the

St. Louis area. Being closely competitive, the firms would be expected to have reasonably comparable personnel policies and wage structures, and employees with similar education. (It was not possible to obtain information about these variables.) Since both groups were in the St. Louis area, we would expect them to be similarly affected by environmental factors, such as local health conditions, the quality of hospital facilities and the relative availability of hospital beds.

Some differences existed, however, in the age and sex distributions of the groups, as indicated in Table 1:

TABLE 1—DISTRIBUTION OF BLUE CROSS SUBSCRIBERS, GROUPS P AND S, BY AGE AND BY SEX, 1957 AND 1958

Age and Sex	Percentage of Total Subscribers			
	Group P		Group S	
	1957	1958	1957	1958
<i>Age:</i>				
16-25	21.7	21.3	30.6	29.6
26-35	12.7	12.2	10.8	11.5
36-45	18.1	17.4	13.7	12.1
46-55	26.5	25.0	27.3	27.0
56-65	19.0	21.7	17.6	19.5
66-75	1.6	1.9	—	0.3
76-85	0.3	0.5	—	—
<i>Sex:</i>				
Male	47.8	49.1	51.2	50.5
Female	52.2	51.9	48.8	49.5

Referring to the group retaining the "standard" Blue Cross coverage as "S", and the group adopting the more liberal "preferred" Blue Cross coverage as "P," we may point out further that the mean age of female subscribers of group P was six years greater than the mean age of female subscribers of group S. In 1957 the mean age of group P females was 38.2 years, compared with 32.2 for group S females. In 1958 the figures were 39.3 and 33.3. Since the differences in age and sex structure were relatively unchanged during the two-year period investigated, they would not appear to exert any substantial differential impact on the comparative experience of the groups before and after the adoption of preferred coverage by one group.

During 1957, both groups had Blue Cross coverage paying standard benefits. In addition to Blue Cross coverage, group P had Blue Shield medical coverage, while group S had similar coverage, but with a commercial insurance carrier. As of February 5, 1958, one group chose to obtain the more comprehensive Preferred Blue Cross coverage. The decision was made on an individual basis, with at least 75 per cent of the eligible employees being included.¹

¹ Costs for the standard coverage were \$6.00 per month for a family membership, and \$3.00 for an individual. Costs for the preferred coverage were \$7.90 and \$3.30. The fact that one group chose the preferred coverage with its increased premium while the other

Differences between the standard and the preferred coverages pertained to ancillary services and private room accommodations. Specifically, the most significant differences were the following: The maximum allowance for private room accommodation was \$10 per day under the standard plan and \$12 under the preferred; laboratory services of only a routine character were covered under the standard plan, while there was no limit to coverage under the preferred; and under the standard plan, there was no allowance for diagnostic tests, anesthesia services, and physical and shock therapy, whereas there was no limit to the allowance for these services under the preferred plan. In general, other benefits for both preferred and standard plans were the same.

Because the study was made for the first year of coverage under the preferred Blue Cross contract, the possibility exists that the members of group P might not have become fully adjusted to the additional coverage and, therefore, might not have utilized it to the extent that they would in subsequent years. But this does not seem likely, for at least two reasons: First, employees were individually contacted by Blue Cross personnel; advantages of the plan were presented and an opportunity to ask questions was provided. Second, since the preferred coverage involved an increased premium, it is to be expected that employees would become aware of increased coverage provided.

All data were obtained from records of paid hospital cases of the St. Louis Blue Cross Organization, for the years February 5, 1957 through February 4, 1958, and February 5, 1958 through February 4, 1959. Hereafter these periods will be referred to as 1957 and 1958, respectively. The analysis involves comparisons of (1) utilization rates (the number of admissions per 1,000 subscribers), and (2) usage of certain ancillary services and private rooms by the two groups.

II. *Utilization Rates*

Under the preferred coverage, ancillary service benefits were greatly expanded, but only on an in-patient basis. Therefore, one hypothesis studied was that the hospital utilization rate would rise for group P as more of its members entered the hospital in order to avail themselves of the ancillary-service benefits.

Before analyzing the experience of the two groups, we need to recognize a factor which tends to increase the utilization rate in group P during the first year of the extended coverage, but which would not be present in subsequent years. In order to encourage employees to subscribe and bring the membership up to the minimum of 75 per cent of employees required to qualify for preferred coverage, waivers were granted new subscribers for all prior conditions, including pregnancy. Thus persons with pre-existing medical conditions,

did not perhaps reflected a difference in attitude or in anticipated use of services. Since it is precisely these matters which we seek to investigate, no problem is posed by the different decisions of the groups. So long as hospitalization (or any other) insurance is available on a voluntary basis, we may expect "adverse" selection; i.e., those taking the broader coverage will often be the ones most likely to make use of the service either because they are more illness-prone or because they are more anxious to enter a hospital than others in a similar state of health.

who could not otherwise obtain coverage for these conditions, were permitted to obtain coverage by subscribing to the preferred plan. During 1958 there were 13 admissions attributable to such cases. Since we are interested in the longer-run incentive effects of extended coverage on use of hospital facilities, these cases have been excluded in our analysis of utilization rates.

In 1957, utilization rates were 224 per 1,000 subscribers for the group which later adopted preferred coverage, and 228 per 1,000 for the group which maintained its standard coverage. This difference was not significant at the 5 per cent level. (This is the level of significance which will be used throughout.) In 1958, utilization rates fell to 193 for group P and 182 for group S—a highly significant difference. Also the difference in percentage decreases in utilization rates for the two groups—13.8 per cent versus 20.2 per cent—was statistically significant.

What factors may be said to have led to the relative maintenance of the hospital utilization rate for group P? Analysis of admissions data, shown in Table 2, disclosed that the relatively poor experience of group P was attributable almost entirely to the following:

1. Increased utilization among subscribers rather than dependents. In fact, the dependents of group P members actually had a relatively more favorable experience than the group S dependents.

TABLE 2—PERCENTAGE CHANGES IN HOSPITAL UTILIZATION RATES, GROUPS P AND S, BY SUBSCRIBER-DEPENDENT STATUS, SEX, AGE, AND DIAGNOSIS, 1957-1958

Status, Sex, Age, Diagnosis	Percentage Change in Utilization Rates, 1957-1958	
	Group P	Group S
Status:		
Subscribers	- 3.1	-22.9
Dependents	- 27.2	-17.5
Sex:		
Male	- 22.9	-21.3
Female	- 13.4	-19.4
Excluding deliveries	- 14.2	-26.3
Age:		
15 years and under	- 47.4	-37.9
16-35	- 29.5	-28.6
36-55	- 8.3	- 4.4
56-75	+ 19.8	-17.1
Diagnosis:		
1. Diseases of respiratory system	- 51.9	-55.9
2. Diseases of digestive system	+ 24.2	-18.5
3. Diseases of genito-urinary system	- 8.3	-25.6
4. Accidents, poisonings and violence	+137.5	+40.0
5. Diseases of circulatory system	- 29.4	-27.3
6. Deliveries and complications of pregnancy, childbirth and the puerperium	- 10.2	- 2.2

2. Increased utilization among females rather than males. This was true whether or not admissions for deliveries were included.

3. Increased utilization among persons 56 years of age and over. Among persons over 55, group P had an increase in utilization rate in the first year of its preferred coverage, while group S had a decrease. In no other age group was the group P experience unfavorable relative to that of group S. The evidence, though not complete, indicates that the increased utilization among females, noted above, occurred among older (over 55) females in particular.

4. Increased utilization for persons with diseases of the respiratory, digestive, and genito-urinary systems; and accidents. For all of these classes of diagnoses (1-4 in the lower portion of Table 2), the percentage change in the group P utilization rate in 1958 was significantly different from the percentage change for group S, and each of the differences was in the direction of greater increase or smaller decrease in group P utilization. These four diagnoses accounted for some 50 per cent of the hospital admissions.

For diseases of the circulatory system (diagnosis 5) there was no significant difference between the percentage changes in utilization rates for the two groups. For deliveries, etc. (diagnosis 6), there was actually a significantly greater percentage drop in the group P utilization rate, though this is presumably a result of the greater mean age of women in group P.

Thus, the hypothesized increase in group P hospital utilization rates relative to group S has been supported, though it may be food for thought that the relative increase occurred mainly in the case of older females. In so far as women are secondary, rather than primary family-income earners, the opportunity cost of their hospitalization may be less than for their husbands. This, in addition to medical conditions, may help to explain the comparatively adverse experience among older females of group P.

III. *Use of Hospital Ancillary Services*

The new provisions of the preferred program included liberalization of coverage of ancillary services expenses and broadened benefits for private-room accommodations. The hypothesis investigated now is that expenses incurred for ancillary services, and the use of private rooms, would increase for group P relative to group S. Since the marginal cost of these additional services to the patient falls (to zero for ancillary services, though not for private rooms), we might expect increased use.

The increase in total ancillary service costs per admission for group S (see Table 3), was not significant, but the increase for group P was significant.

When we investigate experience of the two groups with regard to usage of private rooms, we find that the relative frequency of use of private rooms declined for both groups between 1957 and 1958. For group P the decline was from 19 to 17 per cent of total admissions; for group S the decline was from 21 to 17 per cent of total admissions. Though the drop for group P was proportionately smaller than for group S, the difference was not significant.

The hospital charge for a private room was close to \$18 per day. Apparently the differential in cost to the patient between the Blue Cross allowance (\$12 per day) and the hospital charge for a private room was sufficiently sub-

TABLE 3—MEAN COST PER HOSPITAL ADMISSION FOR CERTAIN ANCILLARY SERVICES, GROUPS P AND S, 1957 AND 1958

Service	Cost Per Admission			
	Group P		Group S	
	1957	1958	1957	1958
Diagnostic X-ray	\$16.25	\$19.97	\$14.91	\$14.00
Clinical laboratory	8.20	12.20	7.46	6.52
Other*	15.28	20.40	13.42	16.82
Total	\$39.73	\$52.57	\$35.79	\$37.34

* Includes routine laboratory, basal metabolism, physical therapy, X-ray therapy, radiation therapy, and electrocardiograms.

stantial so that the extra \$2 allowed group P members did not significantly influence their private-room use.

IV. Summary and Conclusion

As might be anticipated, the group electing the broader, preferred Blue Cross coverage, did increase their utilization of hospitals relative to that of the group retaining standard coverage. The increased availability of ancillary service benefits apparently led to relatively more frequent use of hospitals by group P members. The relative increase in the group P utilization rate, however, was not found among all subsets of group P. Rather, the increase was concentrated among females over 55 years of age.

Among those group P members entering hospitals we discovered a significant increase (relative to group S) in their use of ancillary services, which were covered in full. Yet, no significant increase appeared in private-room use, benefits for which were also increased to group P members (though only partial coverage was provided).

One hypothesis which seems to merit additional investigation is that the extension of hospital care services—whether through private or public programs—may have significantly different impacts among the sexes and among persons of different ages. If this is the case, the financial implications of extended medical care may be related in an important way to the present and future age and sex structure of the populations involved.

Second, it would be fruitful to study the possible existence of benefit “thresholds.” By this we mean that, up to some point, increased benefit allowances may only shift part of the financial burden of hospitalization from the patient to the insurer without leading to increased total costs. To the extent that some out-of-pocket payment by the patient is required (as in the private-room case even under the preferred Blue Cross plan), a reduction of the patient charge—but not to zero—may have little or no incentive effect on utilization. Thus, the relative frequency of use of private room accommodations, for example, may be quite inelastic with respect to patient charge over a significant range, but may become more elastic at charges very close to zero.

This is more likely to be the case where "good," lower-cost substitutes are available; semiprivate rooms under the Blue Cross Plan are an example, because no patient charge was made for these accommodations, while there was a charge for the private room.

It is commonplace to assume that if medical-care coverage is broadened, total national costs will not merely be shifted among people, but will always be increased. Whether this is correct, and equally so for all age, sex and other groups of the population and for all magnitudes of extended coverage, is by no means clear. The present study suggests that the assumption is open to question.

BURTON A. WEISBROD*

ROBERT J. FIESLER*

REFERENCES

1. R. M. CUNNINGHAM, *The Blue Cross Story*. New York 1958.
2. Report submitted to the House Committee on Ways and Means, 86th Cong., 1st sess., by the Secretary of Health, Education, and Welfare, *Hospitalization Insurance for OASDI Beneficiaries*. Washington 1959.

* The authors are, respectively, assistant professor of economics at Washington University, St. Louis, and 1st Lt., U.S. Army. We wish to acknowledge helpful comments by Werner Z. Hirsch and Herbert Fraser on an earlier draft. We are also indebted to Group Hospital Service, Inc. (Blue Cross), St. Louis, and its president, Oscar W. Rexford, for their cooperation.

The Burden of the Public Debt: Comment

In a recent note Messrs. Bowen, Davis, and Kopf present a case for the classic view that deficit financing of public expenditures places a burden on future generations, as compared with pay-as-you-go financing [1]. The purpose of this comment is to suggest that they are right for reasons that are, if not wrong, at least needlessly roundabout and largely irrelevant, and that former President Eisenhower was right, if at all, only under circumstances that are still far from being realized.

The authors of the note base their discussion on what would, in non-emergency times, be a rather unlikely reaction of individuals to the change in fiscal policy in question, namely the financing of bond purchases entirely by curtailing consumption, and trace the results through generations of individuals in a way that tends to obscure some of the fundamental repercussions on such matters as investment and the marginal productivity of labor. Their analysis may have some validity in a borrowing and rationing situation such as occurred during the second world war, but it seems inapplicable to periods where individuals are in fact free to expand their total consumption. The Eisenhower statement is less specific, but while its implications could be supported in a context where full employment was assured, this was so far from being the case in early 1960 that it must be considered at least ill-timed. The analysis that follows is equally irrelevant to the current situation, in that it attempts to trace the consequences of debt finance under full-

employment conditions. However, it is based on assumptions about consumer behavior that might be more appropriate to an era characterized by a vigorous full-employment policy but without widespread direct controls such as rationing. Unlike Bowen, *et al.*, no attempt is here made to separate out the generations in terms of age groups; for simplicity the population at a given epoch is considered as a whole, except as it may be appropriate to consider a subdivision into recipients of labor income and property income respectively.

The crux of the problem of the relative burden of debt finance and tax finance is that monetary and fiscal policy together provide two major degrees of freedom for over-all public policy by means of which control can be exercised, within limits, over two basic parameters of the economy: the aggregate level of activity and consequent output, on the one hand, and the way in which this aggregate output is apportioned between current consumption and capital formation, on the other. A firm commitment to the maintenance of a given level of activity and employment will use up one of these degrees of freedom; but within this commitment there remains one degree of freedom in the choice of suitable combinations of fiscal policy and monetary policy. If a combination of monetary and fiscal policy is chosen which offsets the greater inflationary effects of lower taxes and more borrowing with restrictive monetary policy and higher interest rates, this will lead to more consumption, less investment, and thus to a retardation of economic growth and a reduction in the heritage of accumulated resources to be handed on to future generations.

Where Bowen, Davis, and Kopf go wrong is in asserting that "resources consumed by a debt-financed public project must entail a contemporaneous reduction in private consumption" [1, p. 703]. If we assume full employment to be maintained whether the project is debt-financed, tax-financed, or not undertaken (and without this assumption the whole argument collapses), and if we assume a "public debt illusion" under which individuals pay no attention to their share in the liability represented by the public debt in determining how much of their income they will spend, we can expect consumer demand to be higher when the project is debt-financed than when it is tax-financed; if inflationary pressures are to be avoided, aggregate demand must be kept within the capacity of the economy by curtailing private investment demand, the increased demand for borrowed funds represented by the debt financing must be allowed to tighten the money market, and if necessary supplementary monetary measures must be adopted so as to lower liquidity, drive interest rates up and generally increase the difficulties of financing to the point where private investment is curtailed sufficiently to remove the inflationary pressure. Only if savings were highly interest-elastic and investment highly inelastic, or if the project financed were specifically such as to substitute directly for consumption expenditure could it be assumed that the resources used would be derived from a reduction in private consumption.

The shifting of the burden to the future that is produced by debt financing is then essentially the shifting of resources out of private investment and into consumption that is induced by the change in method of financing. The relationship, however, may not be dollar for dollar. On the one hand, the

marginal propensity to consume may be less than 1, so that a reduction in taxes of \$100 might cause an increase of spending by only \$80. Further, the tightening of the money market may have repercussions on consumption, so that the actual amount of added consumption and added burden on the future is only \$70. At this point, however, some caution is needed, for the main effects of monetary stringency are likely to be on expenditure for housing and durables, and a precise evaluation would have to consider changes in the residual value of consumer durables as part of the change in the heritage carried into the future, so that only repercussions on net current consumption would be relevant.

Actually, this analysis can show an element of future burden even where additional current public expenditures are financed out of current taxes. If we can assume that the added current public expenditures are not such as to change the consumption function expressed in terms of disposable income, then the financing of \$100 of added outlays by \$100 of taxes will reduce consumption by only say \$80, and if \$100 of resources are to be freed for the public purpose, an additional \$20 will have to come out of private investment, whether through a tightening of the money market or, if the public expenditure is in some way less of a stimulus to private investment than is the consumer demand it replaces, through the acceleration effect of the decline in consumer demand. If the public expenditure is indeed of only transitory benefit, the heritage left for the future will then be decreased by \$20. If the public expenditure of \$100 is to be financed in such a way as not to diminish the heritage left for the future, it would be necessary to levy taxes of \$125, so that individual consumption would be reduced by \$100, and the \$25 surplus would serve to replace in the capital market the vanished individual savings of \$25.

In this analysis it makes no difference whether the heritage is regarded as being left to future generations considered as different individuals or merely to the later years of the same persons. There is, however, one further aspect of the future burden that is important. In the Bowen-Davis-Kopf representation, where the resources required by the project come from consumption, the productive capacity of the economy is unimpaired, and indeed if the interest payments are financed by further borrowing, the final apportionment of the "burden" is deferred until this accumulated debt is retired; if the economy is growing at a rate as great as the rate of interest, there is no essential reason why this cannot be put off indefinitely, so that no identifiable group is harmed, on balance, and the "burden" vanishes from sight. If there is any burden here, it lies in the impairment of the capacity of the future generations to pull this stunt themselves! This paradoxical situation may perhaps be taken as indication that a long-term interest rate lower than the growth rate represents an unstable situation. In any case, there exists an unavoidable "real" burden on future generations whenever the more tangible resources available to the future generations are impaired. If in the face of such an impairment of resources an attempt is made to avoid the burden on any particular generation by maintaining consumption at the level it would otherwise have reached, further impairment of capital will take place, with an ultimate day of reckoning.

In an epoch where we contemplate with increasing equanimity the possibility that the national debt might be allowed to grow indefinitely, at least in absolute terms if not as a fraction of national income, some allocation of the burden is needed other than in terms of the taxpayers who finance a retirement of the debt that may never occur. If debt financing results in a lower level of investment (as compared with tax financing of the same government outlays), so that some future generation finds itself with a lower endowment of real capital, who in particular are the losers? If at this point we invoke a strictly competitive economy with a classically homogeneous production function with diminishing returns to increments of each factor as one or more of the others is held constant, we find that interest rates and the marginal productivity of capital are higher than they would otherwise have been, while wage rates are lower than they would otherwise have been by an amount sufficient not only to absorb the entire reduction in output caused by the reduction in resources, but to allow for the increased rate of return on investment. All of which can be summed up by saying that, *given full employment*, shifting the fiscal policy-monetary policy mix in the direction of debt finance tends to place a burden on the future measured by a fraction of the debt increment somewhat smaller than the marginal propensity to consume; that in the absence of debt retirement or other compensatory action the primary burden of diminished future income will be felt by future wage earners, and that there will in addition be a tendency for the income distribution to shift in favor of property incomes.

While this analysis does depend on a public-debt illusion or its equivalent, elimination of this factor eliminates the shifting to the future entirely, and with it, indeed, the effectiveness of fiscal policy as an instrument of stabilization. It is perhaps paradoxical that it is precisely in the field of local finance where the debt burden is most clearly a charge against identifiable pieces of property and the public-debt illusion should be at its weakest that the virtues of "pay-as-you-go" have been most universally applauded. Indeed it is here that the property owner in a town that floats a debt instead of raising the property tax rates can maintain a financial status equivalent to that of his peer in the neighboring debtless community by taking his tax savings and stepping up his mortgage payments. The reduced mortgage balance will offset the decline in market value produced by the overlying public debt, so that his equity will remain unchanged. Aside from the gain he may realize by reason of the margin between the interest rate on his (taxable) mortgage and that incurred on the (tax-exempt) public debt, he cannot ultimately escape his share of the burden even by dying penniless, for in the sale of his property a rational market will have capitalized the future debt service burden allocable to it. To be sure, a rigorous analysis is complicated by the fact that new construction in a debt-burdened community will be discouraged by the consideration that improvement will increase the share of the debt burden borne by the property being improved. But by and large, assuming a fully rational market, local debt finance will not shift the burden to the future, though it may, if carried too far, cause future administrations to have financial headaches, particularly if they are hemmed in by statutory limits on tax rates and debt rates.

If the unrealistic assumption is adhered to that the resources are taken entirely from current consumption, then it is fair to say that it is not the undertaking of the expenditure on the basis of debt finance that has imposed a burden on future generations, but rather the decision of the present generation as individuals not to bequeath the bonds thus acquired to their heirs in the subsequent generation. If individuals of this generation have objections to imposing a burden on the future, it will always be open to them to avoid this result by increasing the amount they individually bequeath to the future generation by an amount sufficient to pay off the debt. Moreover, while this is always possible (and would not even be frustrated by the imposition of death duties, since the added revenues thus produced would also be available to retire part of the debt), the reverse option, *i.e.*, that of taking individual action, where the project is tax-financed, which would impose a burden on the future generations, is less completely available: it is often difficult to arrange to leave a negative estate when the estate was originally zero or very small. On this basis one could even argue that debt financing is the preferable policy in the abstract, in that it leaves a wider range for individual choice: if policy B gives individuals the freedom to choose actions which will bring about all of the results that are possible under policy A, whereas under policy A there are no available actions which would reproduce some of the results available under policy B, then B is necessarily to be preferred. The need to deny this proposition if pay-as-you-go financing is to be advocated may incidentally compel recognition that the "conservative" point of view in this case necessarily implies the acceptance of some kind of social as distinct from individualistic values.

Thus far the discussion has been largely in terms of relative interests of groups of individuals, in the individualistic tradition of classical economics. The more popular concern, nowadays, is with the promotion of economic growth. It is apparent from what has been said above that to the extent that growth is a result of capital formation, policies involving excessively large amounts of debt financing are inimical to growth. Indeed, if short-run stability were not in question, the maximum rate of growth compatible with a level price trend and a given pattern of government outlays would be obtained by having a maximum degree of monetary ease, the lowest possible interest rates, and a level of taxation sufficiently high to offset the resulting inflationary pressure, probably but not necessarily involving a substantial budgetary surplus.

Maintaining maximum growth under these circumstances involves abandoning monetary policy as a means of checking downward fluctuations, and having to rely solely on more cumbersome and slower acting tax or expenditure changes as a means of correcting deflationary developments. Moreover, in an open economy, the "growth" may take the form of foreign investment and the accumulation of claims to income from abroad, a development that may on the one hand involve risk of default or expropriation and on the other may forfeit whatever local benefits may derive from external economies.

If a more rapid rate of growth than this is desired, or if it is felt essential to maintain a larger reserve of potential monetary stimulus, this can only come

about either through a larger scale of direct government investment, through shifts in tax policy from taxes on property and on corporate income and the like to taxes on personal income and consumption, through outright subsidy to private investment, or through the adoption of policies which will make inflation of the price level (not necessarily uncontrolled or accelerating) the normal expectation of investors generally [2]. In this last case we would have the paradox that while a large public debt is generally considered to be inflationary, deliberate inflation might be the means whereby full employment would be made compatible with a reduction in the real debt and an enhancement of the heritage being bequeathed to the future.

In any case the essential precondition is *given full employment*. The analysis is relevant only where it is assumed that some given level of employment is to be maintained. If variations in fiscal policy are undertaken without the proportionately vigorous correlative monetary measures needed to stabilize employment and prices, then a surplus, far from being "a reduction in our children's inherited mortgage" [3] can easily give rise to increased unemployment and a multiplied and fruitless burden on both the present and the future. In the context of January 7, 1960, the multiplied burden would seem to have been a more likely outcome than the reduction of the mortgage, and indeed we may yet be a shockingly long way from being able to count on that degree of coordination and vigor in the application of monetary and fiscal policy that would make the classical analysis of the debt burden once again relevant and the Eisenhower attitude regarding the virtues of a surplus an appropriate one.

WILLIAM VICKREY

Columbia University

REFERENCES

1. W. G. BOWEN, R. G. DAVIS, and D. H. KOPF, "The Public Debt: A Burden on Future Generations?," *Am. Econ. Rev.*, Sept. 1960, 50, 701-6.
2. WILLIAM VICKREY, "The Optimum Trend of Prices," *Southern Econ. Jour.*, Jan. 1959, 25, 315-26; "Stability Through Inflation," in *Post-Keynesian Economics*, K. Kurihara, ed., New Brunswick 1954, pp. 89-122.
3. PRESIDENT EISENHOWER, *State of the Union Message*, January 7, 1960.

The Burden of the Public Debt: Comment

In "The Public Debt: A Burden on Future Generations?,"¹ Messrs. Bowen, Davis and Kopf have failed to prove President Eisenhower right and the majority of professional economists wrong; but they have given us new insight into the problem by introducing, perhaps not quite deliberately, a useful distinction between social cost in the sense of resources diverted and subjective burden as experienced by individual citizens. We remain unconvinced that the social cost of a public project can, without an external debt, be shifted from the time when it is incurred; but the authors seem right in saying that its burden can be so shifted if by burden is meant what individuals consider a

¹ This *Review*, Sept. 1960, 50, 701-6.

burden: the balance of private costs and private benefits, corrected for changes in disposable income occasioned by the public debt.²

If carried out at a time of full employment, a \$1 billion public project, however financed, involves the *cost* of \$1 billion worth of resources diverted from consumption and/or private capital formation; but it imposes no *burden* on the community if people voluntarily give up their command over these resources in exchange for government bonds. By buying the bonds, the public reveals its preference for the bonds over current consumption or private securities and incurs no more of a burden than if it had bought Ford stock or Ford automobiles instead.³ A burden is imposed on the public only if *and at the time when* the promise written into the bonds is either formally broken or broken in spirit. This happens, for example, when the public project financed by the bonds fails to raise the gross national product and the government pays interest on the bonds out of additional taxation. In such a case, the interest payments fail to add to disposable income and thus fool the public. This constitutes, in a sense, a breaking of the government's original promise, since the public sacrificed consumption and/or private capital formation in exchange for the promise of additional income (the interest on the bonds) which it is not getting. Bowen *et al.* are right in arguing that the burden so imposed is a genuine burden and that it is distributed over the entire lifetime of the bonds—as well as over the lifetime of all future bonds that may be issued for the sake of redeeming the original ones.⁴

I part company with the authors when they speak of yet another burden imposed by and at the time of the redemption of the bonds. They argue that when the government repays the debt, the additional taxation reduces disposable income and hence consumption, while the replacement of the public's holdings of bonds by cash has little or no effect on its market behavior, so that on balance consumption is reduced, which, they assert, is the main burden of the debt. This would be all right, except that the authors forget about the crucial assumption of full employment they made earlier. If full employment and stable prices obtain when the debt falls due for redemption and an unenlightened government raises taxes (or lowers public spending) in order to create the budgetary surplus needed to redeem the debt, then the redemption will lower GNP and inflict a burden on society—but the assumption of full employment has thus been abandoned half-way. If on the other hand the government successfully offsets the restrictive effects of its budgetary surplus by a monetary policy designed to encourage private investment, then the resulting rise in GNP will offset the effect of higher taxes on disposable income and no burden will be imposed on the public. Or again, if all this happens at a time of inflationary pressures and the government redeems the debt as part of its price-stabilization policy, then again no additional burden is imposed; for the

² This correction is necessary, because individuals in their economic calculations always assume their incomes to be fixed.

³ It might be argued, however, that the purchase of war-bonds under pressure of patriotic appeal does involve a burden; but is this more of a burden than that imposed on the buyer of a new car who acts under the influence of high-pressure salesmanship?

⁴ In the language of opportunity costs, this burden is the foregone fruit of growth sacrificed.

additional taxes merely accomplish what in their absence the rise in prices would have done.

TIBOR SCITOVSKY

University of California, Berkeley

The Burden of the Public Debt: Comment

The Bowen-Davis-Kopf thesis presented in "The Public Debt: A Burden on Future Generations"¹ purports to show that, under certain circumstances, the burden of a portion of the national debt can be shifted to future generations. What Bowen *et al.* have succeeded in demonstrating is that a given generation (Generation I) *could* pass the burden of a deficit-financed project to a future generation (Generation II) by selling their bonds (to Generation II) and using the proceeds to raise their level of consumption.

The possibility of this eventuality, it should be noted, existed long before the days of multibillion-dollar deficit finance and existed even in the absence of deficit finance. The older members of any economy which incorporates the principles of private property and the right of transfer are always free to sell their creditor claims. The sale may be made to other members of Generation I or to those of Generation II. If, during the lifetime of Generation I, there had been no deficit finance, they would still be free to liquidate *other* forms of creditor claims—life insurance, industrial bonds, common stock, etc. As a general rule, however, Generation I does not sell its creditor claims (or savings) to Generation II—the transfer is made by bequest.

None of this denies the possibility of the Bowen-Davis-Kopf conclusion; it merely questions the plausibility. In special cases, as where, for example, substantial damage to the productive facilities of the economy, or to some factor, during the lifetime of Generation I result in a low level of living relative to previous levels, the bondholders would be tempted to liquidate their bonds in an attempt to maintain their standard of living. In such a case, the shift of burden would, of course, be more probable.

However, even if one assumes that Generation I does sell its bonds to Generation II, it does not necessarily follow that increased consumption by Generation I after the transfer has occurred will require decreased consumption by Generation II. Conceivably, if this bond transfer takes place during a period in which substantial quantities of economic resources are idle, Generation I's attempt to increase consumption may increase aggregate income and, in turn, lead to a general increase in consumption—including consumption by Generation II. Thus, the existence of unemployed resources at the time of Generation I's increase in consumption would dissolve "the burden of the debt."

Reflection upon the years following the second world war lends the above consideration additional importance. While we describe the period as one of full employment punctuated by mild recessions, in few of the years, if any, were resources utilized to the fullest extent. Certainly, in most of these years a net increase in real GNP could have been attained had consumer demand (or investor or government demand) been greater.

¹ This *Review*, Sept. 1960, 50, 701-6.

But if there are no idle resources, as Bowen *et al.* assume, then Generation II gets just what it bargained for—it exchanges current consumption claims for claims against future goods.

While these considerations confine the Bowen-Davis-Kopf thesis to a rare application, no challenge to the internal consistency of the thesis is intended. There is, however, a weak point in the Bowen-Davis-Kopf chain of logic: the implicit assumption that increased taxes necessarily reduce aggregate *real* consumption. They state: [1, p. 703]

... suppose ... that during the lifetime of Generation II the government decides to retire the debt by levying a general tax in excess of current government spending and using the surplus to buy up the bonds that are now held by members of Generation II. The inevitable outcome of this decision is a reduction in the lifetime consumption of Generation II. The taxpayers of Generation II forego consumption in order to retire the debt and yet the bondholders of Generation II do not experience any net lifetime increase in their claims on consumption goods since they are simply reimbursed for the consumption foregone at the time when they (Generation II) bought the bonds from Generation I. Conclusion: the burden of public project *X* rests squarely on Generation II, and not on Generation I.

If, however, taxpayers reduce consumption in order to pay additional taxes, who will consume the goods made available? Surely not the bondholders whose bonds are retired. Had they wished to consume, they would have sold the bonds on the market or not bought them in the first place. The bond retirement will force the (former) bondholders to shift their savings into other forms—insurance, equity securities, industrial bonds, etc. Bowen, *et al.*, implicitly assume that the bondholders of Generation II, having been bought out, would use the proceeds for consumption. This is a completely unwarranted assumption. The bond retirement program simply changes the form of the assets of the (former) bondholders from bonds to deposits but does not increase their income or consumption.

As the government (of Generation II's lifetime) raises the tax surplus to retire the debt, one of two possibilities may occur: (1) aggregate *real* consumption does not decline (although aggregate dollar consumption does) in which case the bond retirement must have been effected during a period of inflationary pressure; or (2) aggregate real consumption does decline, forcing GNP and investment down, and possibly initiating a chain reaction.

In the first case there has been no burden whatever on Generation II. The real standard of living remains constant and the debt has been repaid from otherwise-inflationary purchasing power. In the second case (which is actually outside of the Bowen-Davis-Kopf frame of reference because they assume full employment), there is a very real burden but it follows from poor fiscal policy rather than from the repayment of debt.

Were prices free and flexible, a surplus in taxes and a concomitant reduction in dollar consumption would lead to lower prices—leaving the taxpayer with fewer dollars for consumption but with correspondingly lower prices. In this case, too, the repayment is burdenless. In an economy with sticky, administered prices, however, a surplus cannot be accumulated through taxation

during a potentially deflationary period without serious consequences. But the consequences do not follow from the repayment of debt—rather from poorly conceived fiscal policy.

JAMES R. ELLIOTT

Northern Illinois University

The Burden of the Public Debt: Reply

We welcome the comments by Vickrey, Scitovsky, and Elliott. At the same time, however, we must insist that none of these comments alters our central point—that debt financing, by means of the intergeneration transfer process described in our original paper, can serve to shift the burden of government spending from present to future generations.

The main thing to be said about Vickrey's paper is that it represents a different approach to the debt burden problem. Whereas we chose to analyze the debt burden in terms of the distribution of lifetime consumption between generations, Vickrey has chosen to analyze the effects of debt finance on the future level of real income for society as a whole.

From this latter vantage point, Vickrey is certainly entitled to object to our assumption that bond purchases are financed entirely out of consumption.¹ In the real world an increase in the public debt will undoubtedly lead to a reduction in both consumption (C) and investment (I); and the secular growth in GNP will be slower the greater the reduction in I relative to C .

But this is by no means the only way in which debt financing can alter the *relative* economic position of different generations. Vickrey's line of reasoning is in no way inconsistent with the important point that, regardless of whether loan finance reduces C or I , loan finance can result in intergeneration transfers of burden. No matter what happens to C and I , Generation I (the present generation) is going to enjoy a higher level of lifetime consumption relative to the consumption of future generations if government expenditures are financed by issuance of debt instruments than if taxes are employed. Under the tax option, Generation I loses either immediate consumption or private claims against investment goods and receives no monetary asset in exchange; under the debt option, Generation I also sacrifices some combination of C and I , but in this case receives an asset (government bonds) in exchange, and thus enjoys the option of selling these bonds later in life to obtain either consumption goods or claims against private investment. Consequently, the assumption that loan finance reduces private consumption is in no way essential to the logic of our argument, and was used to highlight the otherwise unrecognized fact that even if loan finance fails to dampen private investment, the present generation can still shift at least a part of the burden of government spending to future generations.

Another way of making the same point is to note that even if the method of finance were to leave the investment-consumption mix unaltered, the loan-finance technique would make the members of Generation I better off relative

¹ There are several places in our original paper where it appears that we *assert*—rather than *assume*—that borrowing affects only consumption. This was unfortunate, and we apologize for any resulting confusion.

to subsequent generations than would the tax-finance method. Since the loan-finance procedure does, in fact, alter the mix against private capital formation, Vickrey's argument should be regarded as supplemental to our own. Our major quarrel with Vickrey's paper is, therefore, that it does not make clear that his position complements—rather than competes with—the position stated in our original paper.

The papers by Scitovsky and Elliott do deal directly with our intergenerational transfer argument, and we are indebted to these authors for pointing out that higher tax collections *cum* debt retirement are going to have a fiscal effect that challenges our full-employment assumption. But, Scitovsky and Elliott are wrong if they mean to suggest that we must abandon our full-employment assumption if we are to prevent the debt-retirement phase of our argument from collapsing.

We are quite prepared to assume (as we have all along) that, by some method such as flexible monetary policy, full employment and price stability are maintained continuously. Now, if a tax surplus is used to retire debt, monetary policy will have to be used to restore full employment. If this is done, Scitovsky and Elliott argue, the reduction in consumption engendered by the tax surplus will be just offset by the rise in GNP brought about by compensatory stabilization policies, and so we shall be exactly where we would have been if no debt retirement had occurred, and therefore there will be no burden on generations alive at the time the debt is retired.

There are two related fallacies in this line of reasoning. First, Scitovsky and Elliott seem to have forgotten that our definition of burden runs in terms of reduced lifetime consumption, not income foregone at a moment of time. Second, Scitovsky and Elliott neglect the asset effect of the debt retirement operation. Taking account of both these considerations, the following picture emerges: Generation II gave up consumption to Generation I when it bought the bonds from Generation I; the bonds are, of course, the means whereby Generation II hopes to recapture, later in life, the consumption given up early in life. It is true that at the point of time when these bonds are retired, thanks to the compensatory stabilization policies, there need be no drop in the private spending of Generation II. What does happen, however, is that Generation II is stripped of its bonds, and thus loses the assets that it had hoped to use later in life to recoup the consumption foregone early in life. It is by destroying these claims against future consumption that debt retirement locates the burden of the public project on generations alive at the time the debt is retired. Consumption was transferred from Generation II to Generation I when bonds were purchased by Generation II, and now debt retirement has extinguished the possibility that an equivalent amount of consumption could later be transferred from Generation III to Generation II. Hence, on balance, over its lifetime, Generation II has suffered a reduction in consumption even though aggregate real consumption for society as a whole need never have been affected by the whole operation.

We must also be careful not to make the mistake of saying that the public has been given additional money in place of bonds and so has suffered no net reduction in its assets. The money paid to bondholders is nothing but the

money given up by taxpayers. Therefore, the aggregate stock of money in the hands of the public is unchanged by the government's fiscal operation, while the public's bondholdings are reduced—hence Generation II suffers a net reduction in its assets. And, as a consequence, Generation II has fewer assets to carry into the future as a means of competing with Generation III for consumption goods produced in later years than would have been the case if debt retirement had not occurred.

Finally, it is important to note that the above logic is unaffected if compensatory monetary policy (as is likely) fills the largest part of the deflationary gap created by the tax-induced reduction in consumption, not with new consumption, but with new investment. In this case the new claims against investment goods of course represent claims against future consumption. These claims can be considered either as a substitute for the immediate loss of consumption attributable to the debt-retiring taxes or as a substitute for the former claims against future consumption (*i.e.*, the government bonds which have now been retired). But, these new claims against private investment cannot *simultaneously* be considered a substitute for both. Consequently, the creation and retirement of public debt can lead to a redistribution of lifetime real income between generations, given conditions of full employment, regardless of differential effects on consumption and investment.²

WILLIAM G. BOWEN*

RICHARD G. DAVIS

DAVID H. KOPF

² Five very brief comments are in order, although these do not cover all of the points we would like to discuss if space permitted: (1) For simplicity of exposition we have assumed that all taxes levied to retire the debt fall on Generation II; if Generation III is also old enough to share in the tax payments, then Generation III will also share in the burden since their net assets (claims against future consumption) will also be reduced by the combined tax-collection and debt-retirement operation. (2) Throughout this discussion we have been considering debt retirement only in the strict sense of bonds retired through a tax surplus, and have not considered the case where the government "monetizes" the debt. This monetization might be deliberate, or it might arise if the government, faced with falling national income because of its debt-retirement policy, created (and spent) new money. (3) will not affect real incomes, but will reduce net assets and thus extinguish the claims against and Elliott argue) vitiate our argument. Here again, higher taxation *cum* debt retirement The existence of inflationary pressures at the time of debt retirement does not (as Scitovsky future consumption that Generation II received in exchange for its earlier transfer of consumption to Generation I. (4) Nor does consideration of the liability side of the public debt invalidate the conclusions stated above. Whereas government bonds are clearly an asset to the individual and influence his financial planning, individuals do not normally consider their full share of the public debt as a personal liability in calculating their own net worth. And, this is not merely an "illusion," since the taxpayer knows that his death will extinguish his responsibility for this obligation. (5) The reader who would like to see, in a somewhat different context, an arithmetical example of the way debt financing can be used to affect the relative economic positions of different generations is referred to R. A. Musgrave, *The Theory of Public Finance*, New York 1959, pp. 562-65. Musgrave also discusses Vickrey's topic (the effects of debt finance on consumption versus investment) in considerable detail.

* Bowen and Kopf are in the economics department, Princeton University; Davis is with the Federal Reserve Bank of New York. The authors are indebted to W. J. Baumol and S. T. Beza for their comments, as well as to many others whose letters on this subject have proved most helpful.

Measuring the Success of the Elementary Course: Comment

In the March 1960 issue of this journal there appeared an article by Simon Whitney summarizing the results of his attempt at measurement of the degree to which students in economics assimilate the material presented to them [2].

Unfortunately the main force of the Whitney analysis is a rather dismal prognosis for the principles course in particular and, in fact, for the teaching of economics generally. Specifically Whitney concludes: (1) that, on the basis of a before-after comparison, the average amount of improvement in a student's knowledge of economics after completion of a two-semester course is poor,¹ and (2) that even after a year of college economics the typical student does not really know or understand very many of the elementary principles to which he has been exposed.

With regard to what might be done to improve the level of college teaching in economics, Whitney specifically points to several areas where, in his judgment, we need greater teaching emphasis. We will not quarrel at length with this aspect of his analysis. Suffice to say judgment is involved in selecting the areas of economics that need to be emphasized and, more importantly, that the areas of "weakness" revealed by Whitney's testing may or may not be evidence of student or instructor inadequacies. It could be the tests that were at fault. With regard, however, to the more general conclusion that college students learn little from their first exposure to economics it is our view that: (1) Whitney's conclusion is probably much too pessimistic, and (2) had his analysis not been predicated on a wrong assumption his quantitative findings would have been much more encouraging.

To test the before-and-after knowledge of economics students Whitney used several sets of similarly constructed true-false questions. A score of two points was given for each correct answer and no penalty was assessed for wrong guesses. Significantly Whitney began with a score of 50 per cent equivalent to zero "Since guessing would, on average, yield a score of 50 . . ." ² But this, in Whitney's words ". . . implies that a student has as many false as true notions about the questions being answered" [2, p. 160]. To us, the assumption that answers to questions not known were always randomly selected seemed dangerous.³ Suppose instead, we hypothesized, that the "before" results flowed from almost no knowledge or understanding whatsoever of the economic issues being tested. Suppose in most cases these were chiefly the result of random selection. Suppose further that at the end of the course few answers were selected at random and most were selected on the basis of whatever economic reasoning the student was able to achieve, but that the questions, when answered in this fashion, typically failed to indicate the true progression of the student. If this hypothesis were valid, then an average score at the end of the course closely approximating that normally obtained at the beginning of the course should still mean progression from a relatively poor

¹ Whitney found an increase in understanding of about 20 per cent to be usual.

² Unfortunately Whitney often "forgets" that this is what he has done. For example, in the recapitulation, question by question, of some of the results of his findings he sometimes states, and repeatedly infers, that at the beginning so and so many students *knew* [italics ours] the answer and that during the course so and so many additional students learned the point.

³ As is often the case, limited knowledge may lead one astray.

understanding of the principles tested to a relatively good understanding.

To test this hypothesis we must attempt to measure the progress in understanding that was not measured by the Whitney test. For this we would most prefer an essay-type examination. But this is not an approach that easily lends itself to the empirical method.⁴ For this reason, as a compromise measure we settled on asking for a reason for the true (or false) answer selected by the student in each instance.⁵ In doing this we used one of the test sets that Whitney had used and so were able to compare our results with his.⁶

Our raw scores (true or false, unadjusted by the student's reasons) were not markedly different from those Whitney obtained. From this we concluded that our group was about average. However, when we sought to evaluate the reasons students gave us for their answers we found, typically, that large numbers of additional questions had to be counted as wrong if the students had had no economic training, but that if the student had completed two semesters of economics he was much more likely to have an economically sound reason for his choice. Thus, when we sought to evaluate answers, we found a 50 per cent improvement in economic knowledge as contrasted with the 20 per cent improvement that Whitney found.

What does this tend to prove? Our results show that Whitney's quantitative findings are much too pessimistic. Our hypothesis that some of the Whitney questions induce misleading results seems valid. Our hypothesis provides a most reasonable explanation for some of Whitney's findings, and it seems to be further borne out by the kind of answers we often got to some of the questions asked.

As we examined Whitney's results we found a good many instances (42 out of 50 on one test set) where little or no improvement was achieved, and some cases (8 out of these 42) where retrogression occurred. Whitney attributes the latter to statistical error and the former to inadequate teaching methods. We reject both explanations. In the first place the fact that 5 questions of the 8, or 10 per cent of the test, show significant retrogression makes us inclined to doubt the validity of the test. But, we like even less the conclusion that a two-semester course in economics destroys a portion of the valid economic knowledge with which a student begins. In the second place, it also seems unreasonable to conclude that 80 per cent of what is attempted in the principles courses ends in near total failure. We much prefer to conclude that the examination was a bad one.

As we examined the answers we obtained on a Whitney test, we found some questions that were clearly misleading. In the case of one question, in fact,

⁴This is an objection that Whitney anticipates, and he also comments on the difficulty of evaluation of essay results. Whitney attempted to use the true-false-with-answer approach but, to the writers at least, his results are sufficiently unclear that we are unable to evaluate how closely they approximate our experiences.

⁵The possibility of a true-false examination with a strong penalty for wrong answers (5 to 1 for example) was considered, but discarded as likely to be less reliable in its results than the technique selected.

⁶Our test was applied only once, on a before-and-after basis. Obviously, therefore, our results are not conclusive. We do not have enough different student, professor, or test-set categories to get a truly random sample in any sense of the word. On the other hand, our procedure yielded results so markedly different from those Whitney obtained that we suspect that further testing would substantiate the general direction of our findings.

which really was a test of the Lubell thesis⁷ [1], the wording apparently was unclear to the students. As a result, 25 out of 25 students who had had two semesters of economics appeared to miss the point. In other instances, as one might expect, we found cases where perfectly valid conclusions were reached on the basis of an inappropriate assumption. Again we found that a more detailed examination of test results indicated that the typical student understands a good deal more basic economics than Whitney's study would lead us to expect.

Quantitative evaluation of the progress of a college student on any basis except a comparative one seems doomed to futility. To test adequately the absolute progress of principles students, we must first find a test that measures absolute progress with reasonable accuracy. As any instructor knows, it probably would be possible to construct a test on which most students would score about as well at the beginning as at the end of the course; or to construct a test on which students would usually do poorly at the beginning and very well at the end, etc. To meet this problem we need a test that gives an accurate measure of progress in understanding. The simplest way to construct such a test would be to take students with known capabilities and develop a test on which "A" students typically perform well, "B" students not so well, and so on. But, if we adopt this procedure, we define our testing procedure circularly. Our results would be that, after two semesters of economics, good students do well, poor students do not, and the average student makes average progress. Whitney apparently does not fully appreciate this problem. He cites several possible objections to his testing procedure and then goes on to show that even granting the objections the direction of the results will not normally be affected. He misses the point. To the degree that criticisms of the test sets Whitney used have a bearing on his quantitative results the objections are highly significant. That is we accept the premise that students learn something in two semesters of economics; we want to know how much.

In contrast to Whitney we conclude that, lacking valid data to the contrary, the teaching of economics on the college level is satisfactory. We share the hope that it can be improved, but we consider economics to have an important enough place in college training so that, with or without measurable improvement in the teaching of this subject, the course should be retained. This is our value judgment. We would never pretend it is anything else.

CHARLES E. ROCKWOOD*

RICHARD B. HARSHBARGER

REFERENCES

1. H. LUBELL, "Effects of Redistribution of Income on Consumers Expenditures," *Am. Econ. Rev.*, March 1947, 37, pp. 157-70.
2. S. N. WHITNEY, "Measuring the Success of the Elementary Course," *Am. Econ. Rev.*, March 1960, 50, pp. 159-69.

⁷ Question number 25 of Whitney's test set B reads as follows: "When the ratio of total wages to total interest plus profit expands, it is likely to result in an increase in the ratio of national consumption to national income." Clearly this question seeks an evaluation of the impact of income redistribution, not that of an income increase. Whitney rejects the Lubell thesis—i.e. he considers the statement to be true.

* Rockwood is assistant professor of economics at Florida State University; Harshbarger is instructor of economics and mathematics at Manchester College.

Measuring the Success of the Elementary Course: Reply

I am grateful to the authors for their interest in the survey. Next summer I shall send a report to them and others participating or interested (including 35 teachers who have written regarding my earlier communication). May I request those giving the tests to separate the scores by questions according to sex?

The Rockwood-Harshbarger contribution has been to ask for reasons along with true or false answers. It appears that there were 50 per cent more correct answers supported by correct reasons after the two-semester course than before. This confirms the 46 per cent improvement in an earlier test [2, p. 167] in which 28 beginning students and 21 who had completed two semesters gave answers and reasons for the 25 even-numbered questions of set D.¹

Should these results dispel any "pessimistic" outlook or "dismal prognosis"?² As I see it, the 50 (or 46) per cent gain is not an adequate measure of the progress of a class. If an original 30 per cent of good reasons for correct answers, for example, is raised to 45, this still says nothing about the remaining 55 per cent of wrong answers or wrong reasons at the end. An advance from 10 to 15, or even from 2 to 3, would also be 50 per cent. My own summaries, therefore, are in terms of per cent of potential gain (to 100). An advance from 30 to 45 would be 21.4 per cent of the potential, in comparison with 20.9 and 18.7 per cent for the median, and 21 and 17.4 per cent for the mean, of men's and women's colleges in my tests [2, p. 162].³

Tests asking for reasons have a real value, but it is not that of showing whether improved scores on objective questions correspond to improved understanding of the topics covered. They *must* correspond, if the sample is large enough. Zero knowledge, on our questions, would produce a score of 50;

¹Rockwood and Harshbarger mention in footnote 4 that I did not describe this test clearly. I shall do so now. Good reasons for correct answers were marked 3 and weak reasons 1; irrelevant reasons for correct answers, and an equal number of wrong answers, were assumed to represent guesses (though undoubtedly many were offered with more or less confidence on the basis of what was thought to be reasoning); the remaining wrong answers were taken to represent not guesswork but fallacious reasoning. (We did not, however, analyze any of the reasons given for wrong answers.) Of the 700 beginning answers, 167 were accompanied by good, and 65 by weak, reasons; 113 were classified as right, and 113 as wrong, guesses; and the remainder, 242, as fallacious. Of the 525 answers at the end of the course, we counted 183 as having good, and 36 as having weak, reasons, 178 as being guesses, and 128 as fallacies. Good reasons increased from 24 to 35 per cent, weak reasons dropped from 9 to 7 per cent, guesses increased from 32 to 34 per cent, and fallacious reasons dropped from 35 to 24 per cent. The weighted validity of reasons given was 54.7 per cent for the 345 correct answers at the start, and 63.3 per cent for the 308 correct answers at the end. Another way of interpreting the results is that 11 per cent of answers shifted from fallacious to good reasoning, while 89 per cent were unchanged. Still another way is that nearly a third of the fallacious reasoning at the start was replaced by guessing, and about the same proportion of the original guesses by reasoning. If these interpretations are sound, the course at least dissipated a few false notions, in addition to its contribution to good reasoning. But the sample was small, and the detailed results depended on the teachers' subjective judgments of "good," "weak," and "irrelevant."

²I must plead not guilty to these charges. The elementary course *can* be improved—on some topics merely by "a few extra words in class" [2, p. 166].

³It was probably these figures from which Rockwood and Harshbarger deduced that the survey "found an increase in understanding of about 20 per cent" or a "20 per cent improvement."

complete knowledge would produce 100 were it not for imperfect phrasing of some questions and mistakes in answering due to carelessness and haste.⁴ Improvement in reasons would be less than that in scores if students expressed good reasons badly or if they had learned some propositions by rote; it would be greater if teachers were too generous in judging reasons.⁵

Rockwood and Harshbarger say that some of my questions "induce misleading results" and that "perfectly valid conclusions were reached on the basis of an inappropriate assumption." I hope they will send me their evidence for aid in revision.⁶ I can deal here with only the particular questions to which they refer. First, question B 25⁷ is not in conflict with the Lubell thesis as I, at least, understood it in 1947 and reviewed it this week. His italicized conclusion is that "no redistribution of any feasible severity will bring about a large enough change in aggregate expenditures to offer a major contribution to the problem of increasing total demand" [1, p. 163]. Question B 25 does not ask how much the ratio of expenditures to income will increase, but whether it will increase at all. All of Lubell's examples [1, pp. 163, 165, 168] show an increase.⁸

Questions 25, 29 and 49 of set A [2, pp. 163-66] are three of the five on which there was enough retrogression during the course to make Rockwood and Harshbarger skeptical of the test itself.⁹ But is it so unbelievable that cur-

⁴ One teacher has taken set B, and another set D, in my presence; each took plenty of time and each scored 98. It appeared that we disagreed on one answer. I would expect a wider disagreement, and errors of carelessness and haste if there were a time limit, so that the usual teacher scores might be a few points lower.

⁵ Thus I might "doubt the validity" of one test or the other as a result of such inconsistency in grades, but hardly as a result of low marks alone—even a "near total failure" on 42 out of 50 questions, in the words used by the commentators to characterize set A results.

⁶ Some of the poorly worded questions had already been revised—for example, the original B 33: "One injustice in our economic system is that which is inflicted on college professors who receive lower salaries than business men of the same ability." If more carefully worded, this might have been a good question. At three men's colleges, however, scores at the end of the course averaged 36, 31 and 26; four groups of women scored 24, 19, 7 and 0. Although I admired the courage of the minority of students who thus told their teachers that their pay was adequate, I gladly acceded to the protest of the next college and moved to the safer ground of the influence of occupational risks on blue-collar wages. Scores improved: to 82, 77 and 56 for men, and 93, 80 and 73 for women.

⁷ It is puzzling that the average score on B 25 dropped during the course at three out of five colleges. Including some colleges which gave it only before, or only after, the course, the average men's score dropped from 77 to 68, and the women's score from 81 to 73. Evidently most students had "known, sensed or guessed the answer at the start" [2, p. 165]—this being the correct phrase, rather than "knew," which is rightly criticized in footnote 2 of the comment. The particular wrong reasons given by the 25 members of the Rockwood-Harshbarger student group may shed light on why some lost this assurance.

⁸ In terms of third-quarter 1960 consumer spending, \$325 to \$330 billion, the three models used by Lubell for his mildest suggested redistribution would result in increased spending of \$1.6, \$1.6 and \$9.5 billion, respectively. As he says, the third increase is "certainly significant" [1, p. 168].

⁹ Since March I have received another report [see also 2, p. 166] of the use of before-and-after tests in an advanced course. A class in "public control of business," achieved 38 per cent of its potential gain. This is a better result than in any of the elementary tests—35.7 per cent, on set E, at one of the older women's colleges in the Northeast, being now the best.

rent teaching approaches might have unsettled, for some students, the common-sense judgments originally held by a majority that dividends can be spent as well as saved, that depressions are not the times when new highways and post offices will be most used, and that the excise tax is a burden on sellers as well as buyers of gasoline?

Rockwood and Harshbarger would like to see a test on which A students typically perform well, B students less well, and so on; but reject as circular procedure the use of those questions on which A students have been found to perform best. It would at least be a short cut, and sometimes more reliable than essay questions, in recognizing future A students. But my tests were not developed in that way. I merely chose questions a person trained in economics ought to be able to answer. Later one college sent me final examination scores, and a correlation did appear [2, p. 168.]¹⁰

The "value judgment" that the full elementary course, whatever its weakness, should be continued is one to which I subscribe wholeheartedly. That is why the aim of this survey is its improvement. Too many teachers have written me that "our course has been reduced to one semester, and I fear our students would make a poor showing on your tests" or "we cover only selected areas, whereas your tests attempt to cover the whole subject."¹¹

SIMON N. WHITNEY*

REFERENCES

1. HAROLD LUBELL, "Effects of Income Redistribution on Consumers' Expenditures," *Am. Econ. Rev.*, March 1947, 37, 157-70.
2. S. N. WHITNEY, "Measuring the Success of the Elementary Course," *Am. Econ. Rev.*, March 1960, 50, 159-69.

However, answers to all the "public control" questions were in the textbook or lectures, whereas many questions in the elementary tests are not so covered. In general, different considerations control the progress in institutional and in more theoretical courses.

¹⁰ A high correlation between true-and-false scores and grades in the course would mean that the scores confirmed the effectiveness of the course shown by the grades. At this college the correlation ratio between individual test scores and examination grades was only .39. The rank correlation of the 21 test scores (80-40) and corresponding averages of grades was .99. The mean of test scores was 66.3, that of examination grades 67.3. The students achieved a final average mark of C for the course, but only because these examination grades (realistic though they were, according to the objective tests) received a low weight. This C implied that the students had learned about three-quarters of the material; whereas the test score of 66.3, compared with 56.3 for this group at the beginning, implied that only 23 per cent ($10.0 \div 43.7$) of the information represented by the 50 questions, and not already known, was learned. Presumed student knowledge had more than doubled (from 6.3 to 16.3).

¹¹ I cannot, however, claim either that my test questions cover all important subjects in elementary economics or that they are all on the same level of importance. Suggestions for better questions will be welcomed.

* The author is chief economist of the Federal Trade Commission.

BOOK REVIEWS

General Economics; Methodology

The Political Economy of National Security. By JAMES R. SCHLESINGER. New York: Praeger, 1960. Pp. vii, 292. \$5.00.

This is a pioneering book. It is an attempt to come to grips with the rapidly changing economic aspects of national security problems. The attempt is overdue: economists ought to be speaking out on this range of problems much more than they are. For this reason, among others, Professor Schlesinger's book is most welcome. It is the first systematic treatment of this area, the beginning, it is hoped, of a body of literature that can supply much-needed guidance to policy makers.

Having said this, I must go on to say that in my view the book is wide of the mark in many respects. It is, I suppose, inevitable that there should be disagreement over what a book on a new subject should cover; in this case I feel Schlesinger has written competently about a number of problems, but that many are not really relevant; and he has left out a few of the most significant.

He begins with a most satisfactory treatment of why the economist should be interested in national security, and a first-rate simplified version of the uses and limitations of gross national product as a measure of economic power. He then describes the concept of economic potential for war (EPW) as the difference between potential GNP and subsistence for the population. He advances this concept by bringing in the relevance of the kinds of industry a country has: dollar for dollar of output, machinery yields more power than services, at least in the intermediate run. All this is satisfactory, and relevant to a war like the second world war. But what of nuclear war? Here he asserts (p. 64) that "the role of economic capacity in nuclear war is rather nebulous. It is doubtful whether it would influence the fighting, which would be settled by the forces-in-being." In this same connection the adjective "nebulous" appears twice more (pp. 75, 177).

Far from being nebulous, it seems to me that the connection between economic power and nuclear war is central, direct, critical, of overwhelming importance, and indeed the main subject to which a book with this title should be addressed. For economic power or capacity is one of the chief determinants of the strategic position of military powers; it supplies the wherewithal for protecting the deterrent, protecting the population, staying ahead of or even in the scientific race, helping allies, keeping forces modern, achieving the strength from which realistic arms control negotiations can go forward, and harnessing space; in short, wise use of our resources determines whether we survive in a hostile world. And on most of these issues I find nothing in the book (civil defense, for example, is not mentioned), except for the following sentence (p. 178): "After major powers have reached the plateau of industrial plenty, differences in relative economic capacity provide no strategic advantage, aside from the issues of the disposition of that capacity, and its relative vulnerability to attack."

To what then does Schlesinger devote his attention? There is a lengthy

chapter on problems of economic mobilization which surely has for the most part only historical interest. General or selective controls, the impact of controls on small vs. large business—are these really relevant issues today? Is it really a “vital question” (p. 80) whether price or wage controls should be instituted first?

There are chapters on budgetary planning, on international trade, on what makes underdeveloped countries grow. These are competent essays; the author makes particularly good sense when talking about foreign aid, its aims, its successes and failures. But the mortar is somehow missing; the relevance of these important problems to national security is not made apparent. Chapters on general aspects of international trade, or economic growth, seem not to be closely tied to the over-all subject. Furthermore many of these subjects of necessity are treated briefly; hence they suffer from failure to qualify, and from a tendency to assert rather than demonstrate (see for example the assertion of the need for growth “in a balanced way” on page 195, surely an arguable proposition).

In the chapter on Soviet economic growth, Schlesinger tries hard to strike a balance between the high-growth-rate and the low-growth-rate “schools.” But he does this mostly by averaging, an unsatisfactory technique at best. In many ways this chapter is his poorest, which can be excused, I suppose, since the subject matter is both strange and difficult. On what the differential growth rates (whatever they are) really mean to U.S. policy, however, he has some very sensible things to say.

It is encouraging to find people of Schlesinger’s ability writing on national security issues. He has given us a lot to chew on; and if he has emphasized some aspects of the problem which in my view seem less vital and omitted others which seem more so, this is surely not crucial. The important thing is that he has taken the plunge; it is to be hoped that others will join him.

JOSEPH A. KERSHAW

Santa Monica, California

Der Wettstreit zwischen Mikro- und Makrotheorien in der Nationalökonomie.

By FRITZ MACHLUP. Tübingen: J. C. B. Mohr (Paul Siebeck), 1960. Pp. 55. DM 5.—.

For some time Fritz Machlup has carried on a crusade against economic “weaselwords” demonstrating, for example, the imprecise use to which concepts, such as “structure,” “statics” and “dynamics,” or “equilibrium” and “disequilibrium” have been put in contemporary literature. In these lectures delivered to a German audience, he now exposes some of the ambiguities which attach to the notions of “microeconomics” and “macroeconomics,” trying at the same time to evaluate the relative significance of these two approaches for theory formation generally.

It has not been the author’s intention to break new ground, or even to discuss analytical intricacies, e.g., those concerned with the aggregation problem. Rather he defends a common-sense solution, in which the view of the economic process as derived from the behavior of the “parts” naturally supplements the results yielded by observation and analysis of the “wholes.” The dif-

ficulties begin, and Machlup is fully aware of them, when we try to determine what is part and what is whole. None of the definitions which he distills from the literature—distinguishing the micro- and the macrosphere according to subjects of decision-making or the manner of aggregation or the role which price relations play—prove very helpful. Are the planning decisions in a collectivist system macrophenomena because they refer to a comprehensive economic whole, or are they microphenomena since, as decisions, they emanate at least ideally from one will? Conversely, how are we to place a Walrasian general equilibrium?

We are unlikely to find satisfactory answers to such questions unless we are willing to reconsider the manner in which the postulate of "methodological individualism" has been formulated by the Austrian School, on which Machlup rests his case for the primacy of microeconomics. Such reconsideration amounts, above all, to distinguishing between the "molecular" source of all economic decision-making, and the quite diverse magnitudes of the economic units to which such decisions can refer. Only in the model of a *laissez-faire* system may we treat also these units as molecular, namely as representing the ultimate "particles": households and firms. There microeconomics can indeed be defined as dealing with the constituent elements of the economic total as well as with the actual "forces." And macroeconomics is then confined to the study of "structures," namely of the mutual relations among the constituent parts of the system as they derive from the interplay of individual decisions. On what level of aggregation these relations are studied poses difficult statistical but hardly any theoretical problems. However, as soon as we admit into our models policy-making behavior, some of the effective forces are directly concerned with the "molar" order of the economic process, and the "structures" are no longer an unwilling resultant but the purposive creation of decision-making.

Machlup's brief survey of the history of doctrines—from which Marx, the inventor of the investment-consumption model, is unfortunately absent—leads to the conclusion that, in the past, the distinction between microeconomics and macroeconomics practically coincided with the difference between "force analysis" and "structure analysis" as characteristic of a pure market system. This changed for a while when aggregate consumption functions or supply functions were treated as if they described the behavior of original forces. With the pendulum swinging back to the consideration of the true sources of decision-making, the need for unambiguous concepts applicable to mixed systems of economic control is greater than ever.

Even if it does not provide the answer, Machlup's exposition points to the real questions. Besides, in disposing of many undue claims which have been made on behalf of conventional macroeconomics, he has useful comments to offer on a number of incidental issues, such as the meaning of equilibrium, the distinction between *ex ante* and *ex post* magnitudes, or the conceptual difficulties in establishing behavioral relations. There is also an interesting section in which the concept of the firm, which is appropriate for micro-theory, is contrasted with that conventionally applied in business economics.

ADOLPH LOWE

Kratkii ekonomicheskii slovar. (Short Economic Dictionary.) Edited by G. A. KOZLOV and S. P. PERVUSHIN. Moscow: Gospolitizdat, 1958. Pp. 391. 11 Rbl.

Among the problems facing the student of Soviet economics few have been as intractable as the search for the real meaning of concepts and slogans used by Soviet economists and propagandists. The difficulties encountered in this field have not been confined to the non-Communist world. Soviet scholars too have been periodically criticized in Communist journals for their inability to interpret satisfactorily Marxian economics and their application in the USSR.

The purpose of the *Short Economic Dictionary* is to guide Soviet economists. Printed in 450,000 copies, it is the collective effort of 70 Soviet economists. It consists of over 800 entries which vary in length and amount of detail. The entries are placed in alphabetical order and are buttressed in some cases with short quotations from the writings of Marx, Engels and Lenin.

The bulk of the entries consists of definitions and explanations of concepts and slogans embracing every aspect of political economy in the broad sense of the term. Though more space is devoted to concepts used in the Soviet rather than the capitalist economy, the latter is not neglected. On the other hand, the criticism meted out to different aspects of capitalism is not extended to Soviet economic institutions and policies, past or present.

The *Dictionary* also contains a certain number of biographical entries. These are weighted heavily in favor of socialist thinkers and economists with special emphasis on those who were active in czarist Russia. Western economists are dealt with in a variety of ways. Some of those who received favorable mention in the Marxian classics get more sympathetic treatment than, for instance, Keynes who is described as "the ideologist of monopoly capitalism and imperialist reaction" whose theories "the agents of the bourgeoisie in the labor movement are trying to use" to "deceive the working class." G. D. H. Cole is referred to as a "Right Labourite" and J. A. Hobson as "a typical representative of bourgeois reformism." Only four American economists (H. C. Carey, J. B. Clark, A. H. Hansen and Seymour Harris) are considered worthy of inclusion in the *Dictionary*, though their views hardly meet with the approval of their Soviet biographers.

IVAN AVAKUMOVIC

University of Manitoba, Winnipeg

Economics and the Modern World. By LAWRENCE ABBOTT. New York: Harcourt Brace and Co., 1960. Pp. xiv, 880. \$6.95.

This is an excellent text. However, the justification for any new one in an already crowded field depends on its comparative advantage; *i.e.*, the breadth of the need it purports to fulfill and its likely success in meeting that need. Abbott's book is thus reviewed on the basis of five key features suggested in the preface: (1) unique organization which allows introductory price theory as well as national income analysis to come early in the course; (2) careful definition of terms when first introduced, with subsequent listing in the index for a handy dictionary of terms; (3) integration of fact, theory and policy with emphasis on economic theory as a practical tool; (4) clear separation of

value judgments from facts and theories; (5) theoretical parts pitched to the level of freshmen and sophomores.

The text's organization is not unconventional, yet has a few unique features. The five chapters of Part I provide an "introductory view" similar to other texts. Squibs from newspaper and magazine articles are interwoven with analysis to describe the broad scope of modern economic problems. Part II includes four chapters on "markets and prices." This is a desirable arrangement in that the student is introduced early to this basic economic theme. Yet his interest is not choked off by an overdose of the theory of the firm before he studies macroeconomics with its interesting institutional and policy aspects (Part III, Ch. 10-19). These 19 chapters provide ideal coverage for one semester, but subdivision would be difficult for courses operated on the quarter system.

Parts IV and V (7 chapters each) cover conventional neoclassical economics, but not in stereotyped fashion. The interspersed chapters on antitrust, public utilities, organized labor, taxation, and income inequality enliven what for many beginning students is generally unpalatable material.

Part VI contains 4 chapters on "the world and the future." As with most other texts, these most vital issues, about which students are inherently most excited, are saved to the end. Possibly economists are caught in a dilemma, but one would like to see some textbook writer innovate by discussing trade barriers, economic growth, underdeveloped countries, the population problem, and economic systems in the beginning of his book. Do students really need more "background in theory" before these issues can be properly understood? It is doubted if their interest can be suspended from September to May!

The purported clear definition of terms, along with use of the index as a handy "dictionary of terms," does not test very high. In many cases considerable searching in the text was required before either the term or definition could be found. Then, all too often, the term was not defined in crisp fashion. The dictionary device could be much improved if both the term and definition were italicized or underlined on their initial appearance.

Abbott does an excellent job of integrating fact, theory, and policy. The text is replete with cogent examples at each step along the analytical path, reinforcing the author's proposition that economic theory is a practical tool. He is painstaking about stipulating assumptions in building his models and indicating modifications for particular applications.

In some, but not all, policy chapters the author specifies his own opinions of the proper goals to be pursued and the value judgments on which they rest. He dares the student to differ with him and then evaluate whose judgment compares most favorably with that of U.S. society as a whole. These sections should provide ample grist for fruitful class discussion, particularly chapters on agriculture, antitrust, and unequal income distribution. Through these snapshots an image of Abbott's economic philosophy emerges as a classical 19th century liberal (freedom of individual choice) combined with a 20th century liberal (considerable government intervention in creating the context within which economic activity unfolds).

Although the book purports to be pitched to the level of college freshman

and sophomores, it will prove to be an overwhelming task for freshmen and a spirited challenge for sophomores. The theory portions are difficult, not so much because they are so advanced (no isoquants, for example), but rather because they tend to be so encyclopedic. One gets the impression that Abbott doesn't want to leave one stone unturned, particularly in the chapters on national income determination (Ch. 13), theory of money (Ch. 14) and pure competition (Ch. 21).

The charts and tables are generally instructive, some representing pedagogical innovations, such as the "marginal utility wheel" (p. 135). A few, unfortunately, suffer from faulty construction or comparisons (especially pp. 258, 343, 416, and 741). These may be misleading unless clarified by the teacher.

The minor detractions mentioned above notwithstanding, *Economics and the Modern World* should find wide usage. Professors desiring to teach a rigorous principles course should not overlook this book. Those teaching survey or general education courses had better look elsewhere.

FRANK W. GERY

Millikin University

Elementary Economics: Principles, Problems and Policies. By CAMPBELL R. MCCONNELL. New York: McGraw-Hill Book Co., 1960. Pp. viii, 759. \$6.95.

Elementary Economics is an exceptionally well-written and well-organized text for introductory courses in economics. McConnell presents abundant historical, institutional, and policy-oriented material as well as rigorous theory, which is made stimulating and believable through lucid and carefully developed explanations and convincing examples. Also, the book is one of the few introductory texts to do justice to the ideas of J. K. Galbraith and to the subject of economic development.

The first section, "An Introduction to American Capitalism," stresses the nature and methodology of economics and the problem of economizing. The principle of the allocation of scarce resources among alternative human wants is given full expression in chapters on the nature of capitalism, the economic functions of government, and households as income receivers and spenders. Indeed, throughout the book the author succeeds in making the economizing problem the unifying principle. Thus for the student economics comes to be a way of thinking and not merely a collection of economic topics. Supply and demand analysis is introduced early in the book and serves to clarify the general operation of the price system which is explained in this first section. The circular flow of wealth, though expanded in a later chapter, is presented in Chapter 3 which suffers slightly from careless editing.

In the second section, covering national income, employment, and fiscal policy, McConnell succeeds in avoiding any artificial distinction between national income analysis and business cycle analysis. The chapter on national income accounting is as clear and interesting as most text presentations except that the student is not likely to understand without further explanation why or how household savings flow into the business investment stream. Classical

employment theory is well constructed and then well torn down. The explanation of "the new economics" is clear and convincing and does not suffer at all from the simplification required of an introductory treatment. McConnell's linear consumption function will annoy economists who still hold that the marginal propensity to consume declines as income increases. Fiscal policy is given detailed coverage and evaluation.

The third section contains what the reviewer considers to be the only flaw of organization in the book: a chapter on U.S. economic growth follows three chapters on money and banking when it might be better placed in the fifth section of the book dealing with current domestic problems. A separate chapter on bank creation of money, replete with the type of balance sheets one would expect to find, follows a chapter on money and the banking system and provides a sound introduction to monetary policy which is given thorough treatment.

Part IV presents price and distribution theory. The first chapter of this section, describing in general terms the basic market models of pure competition, pure monopoly, monopolistic competition, and oligopoly, is of limited value since later in this section a separate chapter is devoted to each of these market models. Supply and demand analysis, explained earlier in the book, is reviewed briefly, and elasticity is given full elaboration. An optional chapter explains the downsloping nature of the demand curve and the theory of consumer behavior via marginal utility analysis but with no indifference analysis. Supply and the costs of production are accorded detailed explanation. The chapters on market structure are sophisticated, clear analyses with life infused into the abstract models by a good selection of market data. Also, each type of market structure is evaluated in terms of efficiency, rate of technological progress, and social implications. Distribution theory is confined to three chapters: the first explains the derived demand for resources, the second explains wage determination, and the third lumps rent, interest, and profits together giving a brief orientation to these factor returns. This condensation will undoubtedly disturb some theorists but will be welcomed by others, like the reviewer, who are embarrassed year after year explaining at length theories of distribution which are inadequate. This section concludes with a perceptive evaluation of U.S. capitalism.

The fifth section examines, with the aid of tools of analysis already developed, the current domestic problems of monopoly, agriculture, unions, and economic inequality and insecurity.

The last section of the book is concerned with international economics. When reading the two chapters on international trade the student may find it awkward having to go back to the beginning of the book (Ch. 3) to read about the gains from trade and the basis for comparative advantage. A good treatment is given of the problems of underdeveloped countries and a whole chapter is devoted to the economic challenge of Soviet Russia, but at the expense of some attention to other economic systems.

Elementary Economics has minor flaws but no major one; and this reviewer believes that the careful development of the book, the clarity and forcefulness of the explanations, and the stimulation which students will derive from the book more than compensate for the minor flaws. The questions

at the end of each chapter are excellent. A student workbook supplements the text and teachers may benefit from the instructor's manual.

STEWART E. BUTLER

Muskingum College

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

Essays in Economics and Econometrics—A Volume in Honor of Harold Hotelling. Edited by RALPH W. PFOUTS. Chapel Hill: University of North Carolina Press, 1960. Pp. ix, 240. \$7.50.

The economists' respect for the contributions of Harold Hotelling is indicated by this volume of essays written by Arrow, Davis, Ferguson, Friedman, Frisch, Hurwicz, Klein, Pfouts, Samuelson, Tintner, and Vickrey. Perhaps no man has been honored with so impressive a list of contributors, all of whom were former students or associates. And like the work of Hotelling the contributed papers deal with difficult problems in economic theory by means of relatively advanced mathematics.

Samuelson's opening essay on the structure of an equilibrium system is an exhaustive summary of its properties in exceptionally concise and abstract form. This paper follows the lines of analysis presented in his *Foundations*. Since equilibrium systems characterize the method of analysis of all the sciences, it is not surprising that this essay is a discussion of the logic of analytic methods. Unfortunately for this reviewer the level of analysis is so advanced mathematically that he has had to accept the pedigree of the author as evidence of its validity.

The most impressive essay is co-authored by Arrow and Hurwicz. Following Samuelson's conversion of equilibrium to maximization problems, Arrow and Hurwicz continue by presenting a solution to the minimax problem of game theory—a problem that arises because a constrained maximization can be converted to a minimax. Earlier contributions of Arrow and Hurwicz to the gradient method of finding a minimax are related to the convergence to equilibrium in a decentralized system. They provide an economic, institutional interpretation to the gradient method, not only in the case of increasing costs but for decreasing costs as well. Perhaps more interesting to economists, judging by the reviewer's personal experience, is their presentation of methods of converting constrained maximum problems to saddlepoint or minimax problems by means of "concavified Lagrangian functions." This essay like many others is at a very high level of abstraction. As the authors warn, any implications about optimality or criteria of performance in the real world are limited to the case of a single-person utility function, rather than to a society of many individuals.

Vickrey and Ferguson attack practically the identical question with identical results. The issue is Edgeworth's so-called taxation paradox wherein an excise tax on one commodity can result in lower prices. Building on Hotelling's contribution, both authors present nearly identical analyses. Whether their papers are complements or substitutes is here as moot as for most economic goods. Ferguson generalizes to a wider range of possible results, where-

as Vickrey suggests two economic examples where the "paradox" might occur. At the risk of being completely wrong, this reviewer's interpretation of their analyses is that a necessary condition for at least one of the prices to fall is that either (1) the rise in price of commodity x produces a greater excess supply of commodity y than of x , or (2) the cross price-elasticity exceeds the own price-elasticity in demand and in supply! Both are hard to swallow. Is my intellectual throat small, or the morsel oversized, or my sense of taste inadequately developed? In any event this pair of essays found the warmest welcome.

Tintner and Pfouts contribute two closely related essays. Pfouts introduces hours of work and savings as variables in a person's utility; Tintner introduces other people's consumption and income into each person's utility function. As in the case of the simpler utility functions all that can be said about the effects of a price change on quantities consumed is "an income and a substitution effect" with nothing definite about the resultant direction of effect. This holds for the interpersonal utility function of Tintner as well as for the hours-of-work and savings variables in Pfouts' analysis. It is still true that empirically refutable implications require restrictive postulates—something that some economists seem hesitant to acknowledge in the mistaken belief that one shouldn't rule out all possible kinds of behavior.

Harold Davis' paper is an extension of his earlier logical excursion into the analysis of time series of prices by means of differential equations. Frisch presents a series of definitions of input-output coefficients. These are expressed in physical, in volume, semivolume, and current value units. Space prohibits presenting the details here. Until Frisch presents a more detailed explanation of the implications of the various alternatives for input-output analysis, the results of the present essay will remain purely classificatory.

Lawrence Klein compares the efficiency and bias of various methods of estimating coefficients of an equation. He first presents an illuminating discussion of the difference between the estimates of the multiplier, for example, derived from an estimate of the simple consumption equation (the structural equation) and the estimate of the multiplier derived from (the reduced-form equation of) a system of equations. The first can be thought of as a partial analysis model, and the latter as a total model analysis. Thereafter he presents logical and empirical analyses to compare efficiencies of reduced-form equation coefficient estimates with and without a prior imposed restriction. The empirical sampling results cited support the logical analysis.

Possibly beneficial effects of destabilizing speculation are developed by Friedman in the only paper devoid of any mathematics and almost the only one not requiring extensive familiarity with matrix theory. Friedman explores some implications of the conjecture that facing or bearing uncertainty is a sort of activity for which some people are willing to pay a price (because they like to be exposed to uncertainty). He shows that if destabilizing speculation occurred frequently, it could be the result of such preferences.

Professor Hotelling's impressive bibliography (to 1958) concludes the volume.

ARMEN A. ALCHIAN

University of California, Los Angeles

Productivity and Technical Change. By W. E. G. SALTER. Monograph No. 6, Department of Applied Economics, University of Cambridge. New York: Cambridge University Press, 1960. Pp. xii, 198. \$4.50.

No one doubts that technical progress is primarily responsible whenever large increases in industrial productivity are observed. But what are the processes whereby scientific and technical advances are converted from potential to actual gains in output per man? What economic factors determine the rate at which new techniques are adopted? How do factor prices affect the development and adoption of new techniques? Why does productivity per man vary so widely from firm to firm? Why are increases in productivity so unevenly distributed among industries?

Salter makes a brilliant attack on these and related questions, utilizing both a theoretical analysis and an empirical study of 28 British industries during the 26 years ending in 1950. The theoretical analysis developed originally as an aid to the interpretation of his empirical results, but it has become a major contribution and stands independently as the first half of the book. Here is a theory of production in which changing technical knowledge and factor prices determine the best-practice techniques available at any point of time, while the rate of gross investment, itself a function of the relative prices of labor and of real investment, is a major determinant of the speed with which new techniques are adopted. (A larger portion of existing equipment is regarded as obsolete when real wages and the flow of replacement investments are high than when they are low.)

Salter avoids classifying innovations under the misleading labels of "labor-saving" or "capital-saving." Instead he reminds us that most innovations save both labor and capital, and defines a measure of the labor- or capital-saving *bias* of technical advance which he finds more appropriate for our use.

Salter has a happy faculty for building a penetrating analysis from simple theoretical materials. He writes with clarity and balance, presenting his arguments with due caution, but not submerging them hopelessly in a mire of qualifications.¹

Part II of the book reports on an interindustry survey of output, employment, productivity and unit costs in 28 British industries between 1924 and 1950. There have been marked differences among the increases in labor productivity in the various industries. These differences have not been associated with differences in the earnings of labor but with differences in unit costs. The industries showing the greatest increases in output per head also tend to show the smallest increases in selling prices and the greatest increases in total output and employment. The last chapter of Part II contains a similar statistical survey of productivity experience in the United States. The results of the British study are confirmed.

Along with these differential changes in labor productivity there has been a marked change in the structure of output, employment and relative prices since 1924. Salter believes that the primary causes of this structural change have been an uneven rate of technical progress in the various industries and

¹ At one point (p. 39) some confusion is caused by the substitution of "growth" for "decline" when introducing the formulae for the rates of decline of unit labor and capital requirements.

the uneven impact of economies of scale. Factor substitution may have been a contributing factor, but could not have been the principal cause. (Some factor substitution is expected to result from progress, occurring in response to the cheapening of capital goods relative to labor which is brought about by increased productivity in the capital-goods industries.)

An examination of the interindustry structural changes that have been associated with these productivity movements leads Salter to recommend that public policy should hinder neither the growth nor the decline of individual industries: "a flexible structure of production is an important element in a high rate of productivity increase" (p. 9).

Salter has given us an illuminating and realistic analysis of the processes of growth, making effective use of both empirical and theoretical materials. This volume should be a significant work in its area for many years.

VICTOR E. SMITH

Michigan State University

Interindustry Economics. By HOLLIS B. CHENERY and PAUL G. CLARK. New York: John Wiley, 1959. Pp. xv, 345. \$7.95.

The authors of this book have set themselves the goal of combining theoretical and practical aspects of interindustry economics in one short volume. They have not provided many links between application and the more theoretical portions of the text. Where they have made such an attempt the "application" takes on a fairly unrealistic flavor involving substitution of labor for capital, isoquants for the whole economy, etc. This is to be expected, since there is an inevitable lag between theory and application and only the simplest of interindustry models have been applied.

Each portion of the text serves a function of its own, however. Part I provides an exposition of input-output analysis, indicating the relationships between input-output models, linear programming, and economic theory in considerable detail. A few numerical examples, accompanied by graphical illustrations, provide the principal means of demonstrating the basic concepts. The linear programming analog of the transformation function or production possibility curve is presented as well as the production isoquants giving alternative ways of producing the same outputs. The "substitution theorem," that the particular combination of final demands has no effect on the choice of activities in the single-factor case, is also demonstrated by a graphical example.

The algebraic exposition is not always as clear as the graphical, particularly in the exposition of the revised simplex method which has been presented more clearly by others. Also, this reader is puzzled as to why "proportionality is not important" in the input-output model (p. 88).

The book acquaints the reader with the considerable difficulties involved both in constructing and in evaluating input-output models. The various attempts that have been made to evaluate particular input-output projections are described. The authors' own views appear somewhat more optimistic than those suggested by the empirical tests they cite. Their reasons are that better data will be available for future models, and, more important, that the

tests have not been concerned with the type of application where input-output techniques are most useful, such as problems involving a drastic change in the structure of an economy (mobilization or economic development, for example). The best test-case to date is perhaps the "U.S. Emergency Model" dealing with the rearmament program stemming from the Korean War. However, these results are still classified security information. In addition the authors contend that, typically, equivalent alternative studies using conventional techniques cannot be compared with interindustry studies because conventional techniques simply do not exist that can answer the same questions. As one example they cite a model for offshore procurement in Italy which required a fairly detailed commodity composition of import requirements. By what techniques other than interindustry analysis could this be estimated?

The authors are well acquainted with the literature and provide the reader with an overview of what has been attempted in applying interindustry analysis that would take considerable time to acquire independently. The book could serve as a text in policy-oriented courses in economics, providing a survey of theory and practical applications that is readable by those not specializing in interindustry economics or econometrics. It includes a discussion of a wider range of potential applications than is available in other input-output literature.

T. M. WHITIN

University of California, Berkeley

Economic Theory and Organizational Analysis. By HARVEY LEIBENSTEIN.
New York: Harper and Brothers, 1960. Pp. x, 349. \$6.00.

This book uses a novel approach to the theory of the firm to attempt an extension of microeconomic theory. A theory of organization is developed to explain motivation and operations within the firm and hence actions of the firm in the industry. This is certainly in contrast to the traditional theory of the firm in which the internal functioning of the firm is described in only a primitive way.

To begin his fluoroscopic study of microeconomics, the author reviews several important areas in this field. The traditional theory of utility and demand, the theory of competitive equilibrium in both the short run and the long run, the theory of monopoly and monopolistic competition and oligopoly are all covered in a space of 85 pages. In spite of the brevity of the treatment, the exposition is lucid and essentials are covered with care.

The second of the four sections is devoted to defining and applying a concept of specialization. Leibenstein's concept of specialization is stated in terms of activities within production processes. If a group of individuals perform a set of activities in one process which are contained in a set of activities performed by a group of individuals in a second process, then we have a clear indication of greater specialization in the first process because fewer activities are performed by the group in the first process. But the indication is not conclusive because there may be other groups in the first process that are less specialized than some groups in the second process. Hence the problem of com-

paring the degree of specialization between two processes becomes logically similar to the index number problem. The material on specialization is interesting per se and, so far as the reviewer could see, is logically sound, but it seems to be only implicitly related to the remainder of the book.

The largest and most discursive section deals with a theory of organizations. The fundamental construct of the theory is the role or the role-player. The author is careful to distinguish his concept of the role from the usual sociopsychological concept of a role. To the author a role is made up of fields of action, *i.e.*, alternative actions open to the player of a role. Thus the primitives of the theory are fields of action and it is not reasonable to attempt to define or delimit these too closely. The role must be interpreted by the player, and interpretation of the role may (in some instance certainly would) differ from one player to another. Interpretation of the role means deciding what fields of action are appropriate to the role.

Obviously there are many types of role at many different levels. Routine performance roles call for little, if any, interpretation, while roles concerned with policy matters are open to a range of interpretation. The author provides a classification and analysis of role-types.

An organization is defined as a role structure that includes a working group of role players and players that determine such things as the roles to be included in the structure, the players to fill the roles and the payoffs to be made to all players. A firm is defined as an organization whose existence depends on the size of the aggregate payoff, the payoff being derived from the sales of goods and services. This definition offers scope for the author to develop a concept of organizational equilibrium and to rephrase many topics, such as efficiency and scale, motivation, etc., in terms of his organizational theory.

The final section deals or purports to deal with the implications of organizational analysis for microeconomic theory. In this section many interesting and significant observations, especially on the shortcomings of existing economic theory, are made and some suggestions for improving the theory are offered. In spite of evidences of original thinking, this section, which should be the glory of the book, is disappointing. There appear to be two reasons for this. First, the highly specific organizational theory developed in earlier portions is not used to any extent in the last section; this section could stand without reference to the first part of the book. Secondly the models and apparatus of thought are not fully worked out. Many hopeful suggestions are made and the reasoning is carried to a certain stage, but never as far as we might rightfully expect from the author. This is especially clear in the final chapter on the oligopoly problem.

But it is the independence of the last section from earlier sections that is most disturbing. Indeed the bride, microeconomics, refuses to unite with the groom, organizational theory, in a satisfying way in spite of the angry wagging of the shotgun held by Leibenstein, who appears to be the father of the groom.

In a more pertinent vein it may be observed that this book is a contribution to a recent literature of protest and suggestion about the state of microeconomics. Among the longer and later contributions those of Shubik and Baumol come to mind immediately. At the very least it seems that Leibenstein has

suggested an approach that is worthy of serious consideration and that may prove fruitful in the future.

RALPH W. PROUTS

University of North Carolina

The Powerful Consumer: Psychological Studies of the American Economy.

By GEORGE KATONA. New York: McGraw-Hill, 1960. Pp. ix, 276. \$6.50.

This book has much in common with the author's earlier book, *Psychological Analyses of Economic Behavior*, 1951. Both books are primarily concerned with consumer behavior and attitudes with respect to durable goods and savings, as revealed by surveys made by the Survey Research Center of the University of Michigan. This book has benefited from the vastly increased stock of information accumulated from these surveys over many years and from additional experience of the author and other research workers in developing methods of data correlation, in ferreting out conditions associated with the behavior being investigated, and from testing the validity of various hypotheses, for example, the effect of change in income or price, holding constant the effect of change in expectation as to future income and price.

The book has four main sections, namely, Introduction, Attitude Change, Psychological Findings, and Economic Fluctuation. Each of these includes some general discussion of psychological theories, some findings from surveys and some attempts at interpretation of the implications of the evidence. The facts are marshalled in such dense detail that many readers may lose sight of the relevant conclusions. In the interpretation of evidence some use is made of national time series. This constitutes, however, a minor part of the book, and it suffers somewhat from conceptual confusion; for example, in the discussion of savings and the permanent-income hypothesis.

The book is primarily addressed to economists who, by and large, are judged to be ignorant of basic psychological principles and prone to rely on outmoded concepts of economic man. The introductory sentence sounds the keynote of much that follows: "Instability of the economy is still one of our most pressing problems" (p. 3). Later the author claims that: "Information on changes in consumer sentiment contributes . . . to our ability to predict the future course of the economy" (pp. 8-9). Yet in summarizing evidence on the "index of consumers attitudes and samples of consumer durable goods" of the years 1952-1959, the author concludes: "Sometimes attitudes change autonomously and indicate changes in demand for consumer durables which cannot be explained by changes in income and other traditional financial data; sometimes attitudes are influenced by past developments in incomes, production, sales and the like, and do not contribute significant new information . . ." (p. 52).

Nevertheless the general review of findings of surveys made at the Survey Research Center presented in this book should prove useful to sellers of durable goods and of insurance policies wanting insight as to conditions likely to transform potential into actual buyers. In other words, it provides some guide as to probable response to selling efforts.

"Powerful" in the title appears to connote the author's judgment that some

consumers' discretion exists and that where there is discretion there is power. He emphasizes that willingness as well as ability to buy is important. The frequency with which the author has to qualify his findings as tentative and to point to "other" conditions that may be present makes it obvious that he feels that conditions affecting willingness are not yet well understood. He leaves little doubt, however, that in the expansion of this field of knowledge there is at least one enthusiast.

MARGARET G. REID

University of Chicago

The Demand for Durable Goods. Edited by ARNOLD C. HARBERGER. Chicago: University of Chicago Press, 1960. Pp. vi, 274. \$5.00.

This compact volume contains five demand studies on major durable goods, including housing, refrigerators, automobiles, farm tractors and plant and equipment investment. The editor presents a business cycle model, using the parameters estimated by the authors of the various studies. While one may disagree with specific points and possibly the general framework, it is nevertheless true that a major benefit of a book like this is the common viewpoint adopted by the various authors. All too frequently quantitative studies of a particular subject proceed from diffuse points of view, and therefore the total effect has less impact than the sum of the parts. In the present case the unified approach has resulted in greater impact.

Several features are common to all the studies. First, all of them use the stock adjustment or "flexible" accelerator models, which have become increasingly exploited in econometric work for the study of durable goods. These models were first brought to the attention of economists by Richard Goodwin in 1948, and several years later by Hollis Chenery. A rugged parochialism, however, has led the authors to ignore these historical origins. The basic model has these characteristics: The net stock of capital demanded is presumed to be a constant proportion of the difference between the desired net stock at the end of the period and the capital stock at the beginning of the period. The proportionality constant represents "the speed of adjustment" coefficient. In these studies, the speed of adjustment varies between .05 and about .4 per year, depending upon the commodity. The demand for gross investment also includes a replacement component, where replacement demand is ordinarily presumed to be proportional to the stock of capital at the beginning of the period. The validity of the model, of course, depends upon what is included in "desired stock of capital" for the end of the period. The authors generally consider a highly conventional variety of economic variables, principally prices and income for consumer durables and a somewhat wider range of variables for producer durables. An outstanding feature of these studies is the serious consideration given to measurement of the stock of capital. Various essays, particularly the Griliches tractor study and the Chow automobile study, contain worthwhile and relevant discussions on the construction of empirical measures of real capital assets corresponding to pertinent theoretical economic constructions.

Second, the studies mostly depend upon aggregative time series and further,

to quote the editor, "all the studies rely exclusively, though not naively, on the least squares method of estimation." The statistical difficulties inherent in the use of aggregative time series are well known and need not be repeated here. Furthermore, cross sections would not be appropriate data for the estimation of the coefficients of principal interest to the authors of these studies. While these studies will and should provide a target and useful reference for much future work in the area of durable goods demand, subsequent advances in knowledge about the demand for durables is most likely to come from much more detailed consideration of the structure of the economy.

Third, all the studies use a weighted average of current and lagged disposable income, as an alternative to the usual Department of Commerce definition of current disposable income. The authors find that when the quantity of real capital is regressed against this smoothed value of income, multiple correlations are often higher than when the stock is regressed against current disposable income, along with the same set of other variables. This weighted average past income, attributed to Milton Friedman under the name of "expected income," is a useful device for measuring durable asset demand; after all, the stock of capital represents an accumulation of past investments (minus retirements) and hence is a relatively smoothly moving time series, so that it makes empirical sense to explain it by using "expected" income, a cumulant of past flows. In measuring flow demand, *i.e.*, the demand for investment, however, it was found several times that the current disposable income variant is a superior explanatory variable. In one interesting test of the Friedman "expected" income hypothesis, Gregory Chow defined "unexpected" income as the difference between Friedman's "expected" income and current disposable income as a separate variable, along with "expected" income. Both variables had about the same estimated coefficients. Hence, "expected" income turned out to be indistinguishable from current income in this particular application.

In the initial essay Arnold Harberger uses the estimated parameters to construct an aggregate cyclical model whose behavior is determined by the flexible accelerator for consumer durables, housing and plant and equipment. He assumes that in a typical recession, GNP falls to 4 per cent below "normal" in four quarters, and four quarters later resumes its normal level, while disposable income is assumed to fall below normal by only three-fifths of the drop in GNP because of the "built-in" stabilizers. Harberger concludes: "The picture thus emerges of a normal recession pattern in which the aggregate loss of product probably lies between 2 and 2.5 times the aggregate autonomous reduction in demand. The induced short fall of non-durables demand probably lies between one-third and one-half of the aggregate autonomous reduction, while the induced loss of durables demand probably amounts to between two-thirds and five-fourths of the autonomous reduction."

Here are some of the main findings of the individual studies: Richard Muth, in an analysis of the demand for residential housing, finds that both price and income elasticities of the demand for the housing stock are approximately unity, whereas the interest elasticity of demand for the stock of housing is quite low, about .15. This last result has some possible implications for mon-

etary policy. These implications, however, are limited by one major defect of this study. Muth chose an historical period during which the housing market was strikingly remote from the present by restricting the estimated models to the years 1915-1941. Government finance programs, such as FHA and VA had slight impact. In addition, most mortgages were not self-amortizing. Hence, the analysis consists of an economic history, which may have small structural significance for the present time. Furthermore, the lag adjustment structure, which is likely to be especially complicated in the case of residential construction, has been treated in a fairly cursory manner. Muth finds much higher price elasticities than those of two previous studies. His price elasticity ranges from .7 to 1.80, while previous studies showed price elasticities to be .5 or less. A firmly based estimate of these elasticities, however, must await a more complete specification of the structure than that proposed by Muth.

The demand for farm tractors in the United States has been explored by Zvi Griliches, who has used a particular variety of economic theory to derive a demand function for tractors. Thus he considers the demand for tractors to be a function of the existing stock of tractors, interest rates and the index of prices paid for tractors divided by the index of prices received for crops. We are informed that "this study, thus, differs from most consumer demand studies in the absence of a 'scale' variable like income. But this is quite consistent with theory. In the conventional theory of the firm, the firm has no 'budget restraint,' and the production function is the only constraint." Output is explicitly excluded, although implicitly it is taken into account in output prices. This formulation assumes that the firm is maximizing profits in perfect markets. Had the cost minimization approach been adopted instead, output would have appeared explicitly, as it does in the standard flexible accelerator models. To say the very least, I find it surprising to suppose that there are no capital market restrictions on farmers. For a great many years at least, farming has been carried on to a large extent by small-scale units whose access to the capital market has been restricted, so that purchases of tractors would then depend very heavily upon the income of farmers, as well as on the credit terms available from the tractor manufacturers. Closer attention to the institutional structure might thus have measurably improved the results, even though a measure of "proprietors' real equity in agriculture" was introduced to deal with capital rationing. This variable did not prove to be statistically significant. More likely, the deviations of desired from actual liquid assets, perhaps best represented by some function of farm income, determine the demand for tractors rather than proprietors' equity. Hence, I believe that Griliches may have some serious identification troubles. Suppose the elasticity of demand for agricultural products in the short run is less than unity, an assumption often made. Then high prices of farm products will be associated with low outputs and the additional, simultaneous relation introduced by this price-income relationship will also cause funds to be generated for farmers which will bias the estimated coefficients. However, one of the best available discussions in print on the problems of measuring capital stock has been written by Griliches.

Gregory Chow's study on automobiles is a re-evaluation of results to be found in his *The Demand for Automobiles in the United States*. He tests the degree to which a demand equation estimated with data ending in 1953 has predicted the demand for automobiles from 1954 to 1958. Chow found that the empirical equation forecasts well for the years 1954 through 1957, including 1955 which was the large model-change year. However, the recession year 1958 resulted in a substantial overestimate. Chow's study also is valuable because it presents earlier results on the different ways in which the stock of capital ought to be valued in order to get an empirically observable time series of the stock of capital. Chow found that the price of an automobile of a given model year declines with considerable regularity about 25 per cent per year so that he used relative price weights to get a value stock instead of simply adding up the total number of cars.

The investment study by Yehuda Grunfeld is the only disaggregated study. He fits time-series plant and equipment investment equations for nine large firms for the years 1935-1954, including the war years. While definitely suggestive and interesting, his results are not comparable with previous empirical results on plant and equipment investment behavior since he measures investment as the sum of maintenance and repair outlays plus gross dollar outlays on plant and equipment, instead of plant and equipment expenditure alone. Grunfeld finds that when a rough estimate of the replacement cost value of gross fixed assets *and* the market value of the firm (defined as the stock market evaluation of common stock on December 31 of the previous year, plus book value of debt) *and* corporate profits are included in the same regression equation, corporate profits are statistically insignificant. He concludes that whatever explanatory value profits have for investment in a simple regression equation, this simple correlation is a proxy effect most correctly represented by the value of the expectations of future revenues reflected in market value and the replacement value of fixed assets. The use of stock market prices in investment functions was first suggested by Tinbergen in his famous League of Nations *Statistical Testing of Business Cycle Theories* and was also given brief attention by Meyer and Kuh in *The Investment Decision*. While stock market prices undoubtedly deserve investigation as a measure of expectations, it seems puzzling that a variable so heavily subject to random disturbances and systematic forces additional to the particular fortunes of an individual firm should still prove such a powerful explainer of investment. After all, variations in stock prices originate from a great many things—shifts in liquidity preference, momentary panics associated with heart attacks of key government officials, or pronouncements of doom and gloom by prominent economists before Congressional committees. Grunfeld argues that systematic factors outside the individual firm ought to be considered. If correct, it is not obvious that the stock market is the most appropriate measure. This study contains some promising lines of analysis which certainly would have been further investigated had not the author most unfortunately met with a fatal accident.

The remaining study deserves briefer comment. Meyer Burstein's study of the demand for refrigerators, a skillful econometric job, ran into extremely

serious data difficulties. The price and income series were so highly correlated that obtaining reliable estimates of their parameters proved difficult. Burstein also grapples intelligently with the problems of taking into account quality changes, since refrigerators have been subject to large quality changes during the past three decades.

Subsequent studies in the area of durable goods behavior will benefit greatly from this collection. Every empirical study (theoretical too for that matter) is open to criticism: Who is to cast the first typewriter? This should not obscure the merit of these analyses, which rank two and one-sixteenth standard deviations above the average.

EDWIN KUH

Massachusetts Institute of Technology

The Classical Liberalism, Marxism, and the Twentieth Century. By OVERTON H. TAYLOR. Cambridge: Harvard University Press, 1960. Pp. ix, 119. \$3.50.

This pleasant and urbane little volume contains four lectures given at the University of Virginia in 1958. They are reproduced substantially as delivered, and have a rotund oral flavor, even to the appearance of a philosopher named Hagel (p. 4) and Marxist utopia in which government would wither away (p. 70). In the first lecture we are introduced to classical liberalism as an ideal of America; in the second, we are introduced with the cool propriety of a perfect host to a somewhat dubious guest—the socialist and Marxian tradition. Then in the third lecture the two traditions, now in modern dress, confront each other on the great stage of the world, in a manner so civilized however as almost to suggest the Harvard Faculty Club. Finally in the fourth lecture some sage advice is tendered to Our Side, which has emerged a shade bloody but quite unbowed from the match of the third lecture, on how to improve its technique in the struggle for men's minds and hearts. The style is a rare pleasure; reminiscent a shade, perhaps a little surprisingly, or again perhaps not so in view of the long Harvard tradition, of Henry James in his later, or more parenthetical (not that this is any disgrace) period; or perhaps even, though this is less fashionable, of Carlyle; but it is, reminiscences or no, a pleasure in these days of short stilted sentences and niggling formulae to find an author who has the courage to clothe noble and sonorous ideas in an appropriate investiture.

Taylor stands in a great tradition of philosophical economists, and his work reminds one in many ways of the more recent works of J. M. Clark; one looks for insight rather than system, wisdom rather than techniques, and the reader will not find these lacking. To give but a small sample: the Thomistic roots of Lockean liberalism and the sharp conflict of both with Machiavellianism and mercantilism is beautifully displayed in lecture I: the historical character of liberalism by contrast with the historicism of Marxism is strikingly brought out in lecture II; the discussion of the "moral use of reason," the epistemological basis of "con-science," the contrast between liberal and ethical democracy with absolute and mechanical democracy in the two final chapters are likewise beautifully done. Nobody, I suspect, will be much startled by this

book; nevertheless it is a book to be enjoyed and savored even by those who are familiar with the ideas which it expresses. If the great questions receive somewhat diffident answers, as Taylor himself acknowledges with engaging modesty, perhaps this is the kind of answer that great questions ought to get.

K. E. BOULDING

The University of Michigan

Early American Policy: Six Columbia Contributors. By JOSEPH DORFMAN and R. G. TUGWELL. New York: Columbia University Press, 1960. Pp. 356. \$6.00.

This attractively produced volume is, strictly speaking, a work of supererogation, for its two eminent and prolific authors earned a place in the scholar's Elysium long ago. Moreover, of the six essays, five were originally published in the *Columbia University Quarterly* between 1931 and 1938, and severely condensed versions appeared in the first two volumes of Dorfman's *The Economic Mind in American Civilization*. The sixth, dealing with John Jay, is new.

While the underlying motive is pietistic, the connecting link between the essays is, appropriately enough, institutional. Each of the contributors referred to in the title was, at some stage in his career, connected with Columbia College or its predecessor, King's. Alexander Hamilton, John Jay, Henry Vethake, John McVickar and William Beach Lawrence were all students—though Hamilton, whose period of instruction ended with a “shower of stones,” did not graduate. (Incidentally, Vethake's experience of academic life was even more dramatic. On one occasion, while prostrate from an attack by a student, he was rescued by the chemistry professor who was armed with a pair of tongs!) Lawrence (briefly), McVickar and Francis Lieber were faculty members. Beyond this institutional link however, they had little in common, for their contributions to policy were as varied as their careers. Indeed this book affords ample testimony to the promiscuous character of the term “policy.” Only Hamilton and Jay, both of whom were statesmen and hence policy-makers, had any direct influence on national policy. McVickar, Vethake, and Lieber spent most of their lives as scholars or educational administrators, and although they often wrote on policy questions and occasionally participated in policy debates in an era when the dividing line between scholarship and propaganda was much fainter than it is at present, they rarely exercised any important influence on policy-makers, and cannot be said to have played a leading role in the formation of public opinion on current issues.

Employing a pleasantly informal style, and proceeding at a leisurely pace, the authors provide a wealth of interesting and scholarly detail on each personality. There are fascinating sidelights on early American academic life and, of course, authoritative accounts of the economic ideas. Each chapter includes a character sketch, a discussion of the man's beliefs and career, and an assessment of his contribution against a broad historical background. Although the reader may occasionally feel that the expenditure of scholarly resources has been prodigal, the authors have generally avoided the mistake of overestimating either the importance of their subjects or the influence of Co-

lumbia. The present essays (apart from the one on Hamilton) differ either in form or content from the originals, and in some cases significantly. The three appendices include a valuable short treatise on bills of exchange by McVickar, some letters from Lawrence to President Buchanan, and some specimens of Francis Lieber's examination questions.

A. W. COATS

University of Nottingham, England

The Economic Point of View: An Essay in the History of Economic Thought.

By ISRAEL M. KIRZNER. Princeton: D. Van Nostrand, 1960. Pp. xv, 228. \$5.50.

What *is* economics? It is not a jesting Pilate question. Every economist at some time must have wondered just what it was that he was doing. The fortunate discover the definition that economics is what economics does, and resume what they were doing before it occurred to them to wonder what it was.

It is not everyone's answer. Some want to know just what it is that makes a fact, an idea, or a problem a part of economics. What for example is there about the content of the books reviewed on these pages which puts them within economics? The only book which indisputably belongs is one that tries to answer these questions, as this book does. It is about a real as distinct from a nominal definition of economics, and that is something meant to "reveal to us the 'nature' of the *definiendum*—which in this case is a concept, a 'point of view'."

Professor Kirzner explains the idea historically. We are told about those writers who believed economics was the science of wealth or of welfare, a point of view shared (he states) by Smith, the Ricardians, Marx, the Austrians, the Lausanne school, and Wesley Mitchell—a crowded gallery. Another viewpoint is that economics is the study of behavior motivated by pecuniary self-interest or the wish to maximize some kind of returns (the Ricardians again, Jevons, and Viner). Another is that economics comprehends behavior in which money is important in one way or another, as Pigou believed it was the measure of the thing maximized. Today most economists believe that what they are doing is studying how men behave when they must relate unlimited ends and scarce means. The idea is attributed to Lionel Robbins, but F. H. Knight has stated it more cogently. At the end of the historical survey we come to the praxiology of Ludwig von Mises, by which economics is defined as the science of human action and all human action as purposive or rational behavior. The idea is expressed with deep conviction and with dedication to its originator who was the author's teacher.

But it is not convincing. If all behavior is rational, then rationality means so many things that it cannot be used to predict behavior. That is a methodological objection. The definitional objection is just as strong. If economics is the study of all purposive behavior, the economist should study all behavior. But that cannot be, and Kirzner acknowledges this with commendable frankness. Still he believes that economics has a "nature of its own," although he does not say what it is. In the end we are told that any distinction between eco-

nomics and other studies of behavior "must be arbitrary." That is a disappointing end for a book which means to reveal to us "the 'nature' of the *definitum*." At this point we are prepared to accept the jesting definition that economics is what we do.

The definition is not in this book, which like others on the scope and method of a subject is serious and often solemn. It obviously has been prepared with much thought, the historical sections are responsible and as detailed as possible, and the writing is as clear as the subject allows it to be. But the purpose has not been achieved, and that, I think, is not a failure of the author but of the leading idea with which he worked.

WILLIAM D. GRAMPP

University of Illinois in Chicago

Economic History; Economic Development; National Economies

Six Lectures on Economic Growth. By SIMON KUZNETS. Glencoe, Ill.: The Free Press, 1959. Pp. 122. \$3.50.

Professor Kuznets' published lectures on economic growth, originally presented in Mexico City in 1958, are certainly a welcome addition to the literature in the field. There are, of course, a number of books that use some statistical data, but there is probably no other book that summarizes so much of the statistical findings in so short and readable a format by one of the most respected authorities in the field. Many of the statistical generalizations asserted are likely to come as no surprise to students of economic development, but they are, nevertheless, of interest to us since it is Kuznets that asserts them. Had someone else tried to make some of the points we might put less credence in them.

Lecture 1 reviews "modern" rates of growth, and points to the fact that from a long-run point of view, modern growth rates are especially high. Indeed, Kuznets makes much of the point that they could not have persisted for a very long time, because if we extrapolate the current high rates of growth backwards we find that they must have been of recent origin. This argument is in fact probably true, but it need not be necessarily so if in the past there had been large long-run cyclical variations in growth rates and output. This is, of course, a minor logical quibble and should not be taken seriously.

In lecture 2 Kuznets considers the time pattern of economic growth and emphasizes that technological change is the necessary condition and the major factor in modern growth. Throughout the book Kuznets uses the phrase "modern economic growth" in connection with the high growth rates achieved in modern times. But one also gets the impression that by modern economic growth one should have in mind the type of growth that is really based on industrialization and mechanization. Surely it is industrialization and utilization of newly discovered sources and means of harnessing nonhuman power and its potentiality that distinguishes modern from ancient growth rather than the rates of growth themselves. The average rates of growth are, of course, very different today than they were in the distant past. But this is the consequence rather than the causal aspect.

Lecture 3 will be familiar to students of economic development who have attempted to grapple with the statistics and generalizations presented by Colin Clark and the counterarguments presented by Bauer and Yamey. The matter discussed here is the uniformities to be found in the changes in the industrial structure of the labor force and in the national product as a country develops.

Lecture 4 considers the long-term trends in capital formation for a number of countries. Kuznets finds, for instance, "that the ratio of gross domestic capital formation to gross domestic production is positively associated with income per capita" (p. 71). Another point that Kuznets makes is with respect to the differences in net capital formation as a percentage of net national income between advanced and underdeveloped countries. He finds, for example, that "the share of net capital formation in net national production in groups I and II [developed countries] exceeds that in group VII [underdeveloped countries] by 8% of national product" (p. 74). Is it plausible to assume that these few additional percentage points account for the striking differences in the level of performance and patterns of growth that we observe between the developed and underdeveloped countries? He concludes that he has a strong intuitive objection to such a theory of history since it places strategic importance on minor details. There is the probability that the ratios of growth that exist today are probably symptomatic of the recent situation and do not reflect a condition that goes back very far in history.

Lecture 5 considers the problem of size. In this area Kuznets seems to conclude that for the most part limitation of size is not really an important handicap to development.

Lecture 6 is of special interest to the economic theorist. In this lecture Kuznets prescribes some tasks for economic theory. The tasks that he sets seem to be formidable indeed: (1) to develop a testable model that would weave the common (and presumably statistically determined) elements of the industrial system, the structure of common ends and aspirations, and finally the cultural and social elements of such economies into a unified whole; (2) to formalize the effects of different initial conditions on economic growth; and (3) to develop a theory as to how growth spreads from one area to another or from one country to another.

This brief review of the contents cannot really give the feel of the book. It seems to me that Kuznets is out to determine two things on the basis of statistical evidence: First, what are the common elements and tendencies that we find in different countries in the course of economic growth? Second, what are the differences that we see? Kuznets discusses both simultaneously although he seems to have a slight bias for underscoring the differences. What generalizations can you make about economic growth if you become immersed in the facts? For facts we should really substitute the word statistics, for these are for the most part, the facts that are emphasized. Kuznets seems to insist, without saying so directly, that we stick to the known statistical facts before we speak.

Despite his high degree of caution, Kuznets does find a number of common

patterns that evolve in the course of growth. Surely this is a hopeful sign. For it means that we may be able to develop some theoretical structure consistent with common elements. At the same time, one is rather surprised that rarely in the volume does Kuznets discuss the reliability of his statistics. What stock can we put in any of these generalizations based on statistics, be they generalizations about common tendencies or differences, if nothing is said about the degree of reliability and the range of probable error. I, for one, would have been intrigued had Kuznets ventured into this area. This last does not by any means reduce substantially the basic value of the book. Though many of us may have believed that there are certain common tendencies to be observed in the course of development, it is surely helpful to get the weighty authority of Kuznets behind such beliefs.

On the tasks for economic theory I suspect that Kuznets may be placing the theorist in a bit too much of a strait jacket. His order seems a rather tall one. Certainly we want theories that fit some of the facts, but must they fit primarily the statistical facts stressed here as well as other social, cultural and institutional facts simultaneously? Do not the facts that we want to select and stress depend in part on their nature and in part on their reliability?

What is really important is to be able to develop theories which are not tautological. They must be consistent with some of the facts of the real world. Economics is, after all, an empirical science. But in the early stages—and surely we are in the early stages—would it not be better to leave the theorist enough leeway to pick for himself the facts that he wishes to tie together within his theory. In other words, the order that Kuznets places for theory seems to be an order for an optimal theory in some sense. Such a request is probably not too helpful at this juncture. Rather, should we not grapple with the problem of trying to determine the present *feasible* theory set and request, at most, the optimal one out of the feasible set?

HARVEY LEIBENSTEIN

University of California, Berkeley

Iniziativa privata e azione pubblica nei piani di sviluppo economico. By PASQUALE SARACENO. No. 1 of Monograph Series SVIMEZ (Association for the Industrial Development of Southern Italy). Rome: Giuffrè, 1959. Pp. 101. L. 600.

Professor Saraceno, one of Italy's leading economists and director of economic studies of SVIMEZ, has prepared this monograph from lectures delivered in 1957 at the Universities of Ankara and Istanbul and at the International Bank for Reconstruction and Development. He writes as an expert in the problems of unification and development of the Italian economy.

His basic theme is that the state in an underdeveloped economy acquires major tasks not foreseen in western politico-economic thinking. The Keynesian approach is inadequate because it emphasizes the promotion of effective demand, letting the market rule from there on. Western socialism looks to destruction of the private sector, has its eyes fixed upon income redistribution, and wholly overlooks the problems of capital formation and income growth.

If, as Saraceno passionately desires, an underdeveloped country is to industrialize without recourse to communist totalitarianism, then it must combine an over-all development plan with a mixture of public and private firms. The public firms must function within a market order. If the tasks laid on them compel losses, these must be explicit so as not to mask inefficiency. As development proceeds, public firms may pass into private hands. Thus Saraceno contemplates a mixed economy, with framework and directive planning to effect the transformation to an industrial order. Old ideologies simply will not do for guides.

Saraceno points out that the advanced capitalistic countries had long ago abandoned automatic mechanisms. Keynesian policies are simply the last in a long chain. Very persuasively he argues, as Myrdal does, that capitalistic industrialism never encompassed the world save in limited exchange relations. Thus it achieved unified economies only in selected areas, while the remainder failed to develop. The choice lay between intensified development at home, plus an eventual welfare state, or much greater investment abroad, to develop a balanced world economy. The former path was chosen. An unbalanced economic world was the result. For the undeveloped and underdeveloped portions market forces and private initiative will not do the job. The state must deliberately undertake the task of transformation.

Here the choice lies between communist methods and a new kind of liberal state, one that uses the market and private initiative where possible, encouraging their growth within an over-all plan. The purpose is to create a unified market economy, where the forces of initiative themselves are too weak. This means the reorganization of peasant agriculture, with absorption of displaced labor by surrounding sectors. Because much labor is unsuitable for modern techniques, there will be a kind of labor shortage, dictating use of capital-intensive methods in industry. As the industrial sector grows, a dual economy will emerge—in productivity, incomes, and growth rates. If industrial wages are tied to productivity, undesirable inequality of incomes and excessive consumption will occur. Wages and monopoly prices must both be controlled, to check the splitting of the economy and the population. The over-all allocation of savings and investment must be fitted to the plan, and deficit financing must be avoided. The state must both fill in for and supplement private enterprise. Once growth becomes self-sustaining and the economy is well unified, private initiative can expand more readily.

All this is familiar, but it needs to be said again and again. The gospel of "leaving it to the market" will not work, and has not worked, in the countries with which Saraceno is concerned. The bourgeoisie are simply not there in the first place. If these nations are to be saved for the free world, they must follow different political precepts. If they take Saraceno's road, they can get a unified market economy and freedom together. The alternatives are continued stagnation or centralized communist control, with the latter the untoward outcome of the former.

GEORGE H. HILDEBRAND

Cornell University

Zur Theorie der Industrialisierung. By SIGURD KLATT. Cologne and Opladen: Westdeutscher Verlag, 1959. Pp. 546. DM 45.—.

In this book we have before us an attempt to present a comprehensive theory of industrialization, including not only the economic, but also the important noneconomic aspects of this process. The result of this effort may be summarized in two main points: (1) Klatt does not make a new theoretical contribution; on the contrary, his presentation is a restatement of previous theories of economic growth, mostly in a form elaborated in the pertinent United States literature. More concretely, Klatt restates the theory of growth of E. D. Domar and Roy Harrod modified by D. Hamberg, R. Eisner, W. Fellner, and others. Hence, on the purely theoretical side, this book will not be of interest to an American reader familiar with the literature on economic growth theory of the last few years. (2) But if this book, though competent, is unoriginal on the purely theoretical side it does present a rather novel and, as I hope to show, useful organization of the material pertaining to the theoretical analysis of the industrialization process. To begin with, Klatt apparently has seen and has drawn upon a vast amount of literature, much of it in English. He appends a classified bibliography which covers 80 pages, and which is a valuable ingredient of the book. But more importantly, he makes the process of industrialization, its general theoretical analysis and its concrete manifestations in given historical situations, eminently intelligible by the very orderly arrangement of the subject matter.

The structure of the book's contents, although related to a stages-of-growth approach, constitutes a conversion of stages into analytical categories associated with economic development. More concretely, the book is divided into three main parts: the first deals with the initiation of the growth process, *i.e.*, the problem of identifying the factors which lead to the rapid stepping-up of economic growth; the second—and largest—part is devoted to the analysis of the industrialization process itself; and the third relates to the analysis of the "postgrowth stagnation," *i.e.*, a flattening out of the growth curve after a period of acceleration (which it has become fashionable to designate as "take-off" but which we may also call by the more time-honored term "industrial revolution").

It is clear from this brief sketch of the contents of Klatt's book that the organization of his material has some resemblance to the description of the growth process by W. W. Rostow. But the similarity is chiefly superficial and based on the assumption underlying both Rostow's and Klatt's analyses that the industrialization process, if plotted diagrammatically, could be represented as a line resembling a logistic curve. The most interesting part of Klatt's book deals with the explanation of the sudden upturn of the curve from its early rather flat to its steep section. This section of the curve corresponds to the period of the elaboration of the preconditions of industrialization and the actual industrial revolution. Instead of using imaginative speculation, Klatt approaches the explanation of the take-off with his customary propensity to synthesize.

First he establishes that there must be present a social, legal, political, and

general environmental framework in which industrial growth can take place. Then he turns to the actual "impulses" to industrialization and shows that various conditions—growth of population, change in productive technology, alteration in the structure of demand, and others—may create conditions conducive to economic growth. Here Klatt does not go far enough. Other "impulses" have been noted by other students of the growth process which, in some cases, have had profound significance. Among these the two which have received the greatest attention in recent literature are the stepping up of the national savings ratio (W. W. Rostow) and the importance of export markets (A. Youngson). Finally Klatt integrates the set of variables he has selected as partial "impulses" by bringing in the Schumpeterian theory of innovation and by stressing the role of entrepreneurship. This leads him to investigate also some psychological dimensions of the display of entrepreneurship, but here his performance is perfunctory and disappointing.

The general impression gained from this book is that it has an eminent didactic value due to its synthetic quality. It would constitute a good text for a senior or beginning graduate course in economic development. Since much of the literature absorbed and utilized in this book is in English, and may be assumed to be unknown to many German students, it is certain to have a wholesome impact on the study of economic growth in Germany. For us it may serve as a model of how an immense body of widely scattered literature can be summarized with advantage, and how the best parts of this literature can be used as material for a comprehensive account of a subject whose empirical manifestations are of the greatest variety and diversity.

BERT F. HOSELITZ

University of Chicago

Ekonomicheskoye razvitiye Sredney Azii. (The Economic Development of Central Asia.) By ALIM MUMINOVICH AMINOV. Tashkent: Academy of Sciences of the Uzbek SSR, 1959. Pp. 298.

The subtitle on the cover indicates that the book is devoted to the "colonial period" in the history of economic development of Central Asia. According to the author, this encompasses the period from the 1860's to 1917.

The attempt to present "colonial exploitation" as a historically benevolent phenomenon when Russia was the exploiting power is not novel with Soviet economic historians. The author is a respected student of the economic history of Central Asia. He is a native of Uzbekistan and is a product of the educational advance of this area during the Soviet period. He states his position with regard to the "objectively-progressive significance of the incorporation of Central Asia into Russia" as follows:

... The incorporation of Central Asia into Russia in spite of the colonial oppression *objectively* [italics mine] met the requirements of the vital interests of the Uzbek nation and has saved it from the likelihood of English enslavement, in which some nations of Asia and Africa currently find themselves.

The incorporation into Russia has created possibilities for the develop-

ment in Central Asia of more modern forms of economic and social relations. It has resulted in serious changes in the economy, the social order, the development of capitalistic relations; [it has imposed] substantial limitations upon the patriarchal-feudal relations; [has furthered the] specialization of the region in the output of a marketable product—cotton—and the creation *eo ipso* in Central Asia of a cotton region, the involvement of the region in the world's commercial-monetary circulation. (Pp. 70-71.)

Apart from the declarative statements which proscribe the general framework of analysis, the book by Aminov is valuable because of its attempt to provide a factual account of the development of this particular region and its interrelation with the Russian economy. The author describes and analyzes the economy of the Central Asian states during the first half of the nineteenth century, the organization of agricultural production with special emphasis upon the conditions of land tenure, the system of taxation and the pattern of foreign trade, which reflected the growing dependence upon the Russian market. This description is useful as a background against which the policies and changes introduced by the Russians during the subsequent period stand out more vividly.

A very detailed exposition of the economic policies applied by the local and central authorities after the Russian conquest follows. The author incisively points out the shifts and frequent inconsistencies in the policies prior to the decision to convert Central Asia into a raw-material supply base for the Russian textile industry. The growth of the cotton economy of Russian Central Asia is reflected in the expansion of the area sown under cotton during a quarter-of-a-century as follows:

COTTON SOWN AREA IN TURKESTAN FOR SELECTED YEARS (IN HA.)

	1888	1890	1913	1915
Fergana Province	37,876	55,872	295,867	367,654
Syr-Daria Province	28,231	25,674	83,823	80,900
Samarkand Province	8,718	18,953	35,292	60,714
Transcaspian Province		983	46,845	62,780
Total Turkestan	74,825	101,481	461,828	572,048

Source: V. I. Iuferev, *Khilopkovodstvo v Turkestane*, Leningrad 1925, p. 136.

However, a topic which interests this reviewer, and which was dealt with only in passing by the author, is the market response of Central Asian agricultural producers, especially to cotton prices and to the introduction of new cotton varieties.

The process of adaptation of new varieties (American upland) and the substitution of upland cotton for local varieties was very rapid indeed. Within the five year period 1883-1887 the area under upland cotton increased from 36 ha. to 17,113 ha.; and by 1890 in the cotton areas of Turkestan (Russian administrative description of Central Asia except the Khanates of Bukhara and Khiva) 64,305 ha. of American upland was planted vs. 34,915 ha. of local varieties. By 1900 only about 5 per cent of the total cotton area was still

planted with local varieties.¹ This process took place under the impact of the following conditions and policy measures: (1) the existence of a price differential between upland and local cotton varieties; (2) the higher yield of upland cotton in most areas; (3) a lower rate of taxation for land occupied by upland varieties of cotton; (4) the extension of the railroads to Central Asia, so that cotton could be more cheaply exported from and grain imported into Central Asia; (5) a general increase in tariffs on cotton.

Another interesting phenomenon was the sensitivity of cotton acreage and output to grain prices. The flexibility of cotton producers of this area in shifting between cotton and grains was exhibited on at least two occasions. Cotton acreage decreased in 1902-3 when high grain prices coincided with low cotton yields in Central Asia and low cotton prices on the world market. Cotton acreage also sharply declined during the years following 1916 when grain prices increased steadily and the cotton prices, controlled by the State, were kept stable. (Aminov, p. 216).

A problem of some interest to students of agriculture in backward economies, which is neglected by the author, is the relative success or failure of plantations vs. small-holding farms. All attempts to develop cotton plantations failed in Central Asia during the prerevolutionary period. The explanations advanced by the author are too general and indicate that his research in this problem area was probably insufficient.

Also the problem of credit facilities and their availability to the cotton producers is handled by the author in a pedestrian way. He describes them as combinations of the well-known money-lender type of operation with similar practices followed by the banks and credit institutions. It is true that the bulk of the bank credits were extended to large-scale operating middlemen and to procuring textile firms. However, the author has failed to mention that by 1909 the government embarked on a policy of establishing new forms of credit for small-holders. Although one can point out that the 482 credit and savings and loan associations which extended credit to about 112,000 cotton producers in 1914 were able to meet only a small fraction of the demand for credit of the cotton producers, there is no excuse for not taking note of the interesting institutional development and its role.

One of the virtues of Aminov's study is the availability of an extensive bibliography, which is seldom encountered in Soviet publications. The bibliography includes references to archive-documents, periodicals, and monographs from the prerevolutionary as well as Soviet periods.

Students of economic development in general, and of the Central Asian area in particular, will find valuable data and materials in Aminov's study.

ARCADIUS KAHAN

University of Chicago

The Hungarian Experience in Economic Planning. By BELA A. BALASSA. New Haven: Yale University Press, 1959. Pp. xii, 283. \$6.00.

Mr. Balassa's book is an interesting and worth-while discussion of Hungar-

¹ Increase of area under upland cotton 1883-1887, from Aminov, p. 149. For the 1890 relationship, Department of Agriculture, Ministry of Crown Domains, *The Industries of Russia*, Vol. III. *Agriculture and Forestry*, St. Petersburg 1893, p. 144.

ian business administration in 1949-56. Despite its title, however, it is not really a study of economic planning.

The core of the book is a discussion of management in industry and construction. In it two basic problems emerge. In the first place, the central government agencies found it extremely difficult to prepare directives to plant officials. As a result, the plants operated, for practical purposes, on the basis of "quarterly plans," which amounted to little more than *ad hoc* directives. In the second place, directives were formulated mainly in terms of quantities of output and allocations, with price policy obviously of negligible importance. Therefore, planning followed the procedure of "materials balancing" or, as Balassa puts it, partial equilibrium input-output. It appears to have been excessively difficult to place numerical values on the coefficients of these systems: general equilibrium problems intruded themselves, plant performance varied widely, and so on. One is led to wonder whether the economy may in fact have been nonlinear in important respects. In this discussion Balassa stresses the cost of obtaining information and of supervising centralized directives.

This part of the discussion will not surprise the student of the USSR. He will be at home among the institutions and directives (although Balassa does not point this out), and will recognize as well the violators of orders. In this sense, the book is of interest to all students of Eastern Europe.

Again, Balassa is struck by the disparity between ministerial and plant functions, and is led to speculate on the theory of the firm. Here he is following in the footsteps of those Sovietologists who suspect that even monolithic economies need a microeconomic theory. Balassa will not delight the contemporary formalist school, but he takes a useful step of a more impressionistic sort.

He points out that Hungary underwent reconstruction (1945-47), a three-year plan (1947-49), accelerated industrialization (1950-53), a New Course (1953-54), renewed industrialization (1955-56) and revolution (1956). He states (p. 43) that "The rapid turns in economic policy . . . can be characterized as being based largely on political deliberations, while economic considerations were greatly neglected. . . ." If so, one might wonder whether the administrative problems he describes might not simply reflect a grasshopper economic policy, and whether any further conclusions can be reached from the data. If, however, in some sense management policy did show continuity, it would have been interesting to consider what changes in economic policy would necessarily entail changes in the policy toward plant management.

But these problems, however interesting, do not exhaust economic planning, even in an economy such as the Hungarian. The government, through its budget, controls virtually all construction, and the banking system influences inventories and the money supply of enterprises and consumers. Balassa virtually neglects the budget, regarding investment solely in terms of the management of construction enterprises; he rules out the banking system (p. v) as having nothing to do with planning; and while he concedes briefly (pp. 118-19) that prices have a macroeconomic aspect, in fact he deals only with prices of individual commodities. His discussion of the consumer sector deals basically with the standard of living (here he is interesting, even if his

discussion is on quite a different level from that in the rest of the book), and one would not guess that what went on in the consumer sector had any impact on either enterprises or the government.

Finally, I have found no mention of the fact that the USSR was co-owner of much of Hungarian industry over much of the period under study. If this fact was of no importance in Hungarian economic planning, those who speak of "Soviet colonialism" should be so informed. If it did matter, Balassa should have indicated how Soviet interests in the respective properties appeared throughout the managerial process.

EDWARD AMES

Old Lyme, Connecticut

Inflation in an Underdeveloped Economy: A Study of Inflation in India.

By SANTIKUMAR GHOSH. Calcutta: World Press Private Ltd., 1959. Pp. xiii, 179, 39. Rs 11.—.

The first quarter of the book evolves a theory of inflation applicable to underdeveloped economies. At the outset the author minimizes the usefulness of the inflationary-gap approach, turning rather to a monetary explanation of inflation. Underdeveloped economies continually operate at a bottleneck level comparable to full employment in an advanced economy. Although labor may be redundant, capital scarcity prevents expansion in response to increased demand. Under these circumstances monetary theory comes into its own in explaining price variations.

He points out that the usual instruments of monetary policy may be of limited use in an economy where banking is little developed, but control of the volume of currency gains in importance. To the extent that control of credit is effective in combatting inflation, he argues that it must include specific and direct controls.

Returning to income analysis, he shows the limited usefulness of fiscal policy in an underdeveloped economy. Governmental expenditures for development are essential whatever their cost, but taxation is limited by the poverty of the people, particularly if the government has humanitarian motives. Some inflationary pressure from deficit financing must therefore be expected. He argues that the private sector should bear the burden of having its investment and consumption reduced sufficiently, by direct controls, to prevent serious inflation. He almost certainly underestimates both the capacity and the need to increase taxes, even in poor countries, which would reduce inflationary pressures with less need for the whole array of direct controls he envisages.

The major portion of the book is an informed and careful survey of inflation in India during the war, the immediate postwar years, and the more recent period of development planning. During the war wholesale prices rose by 144 per cent, most of this rise coming between 1942 and 1944; this was an inflation caused primarily by large purchases for export or for use by Allied troops in India. In the early postwar years the import surplus helped to damp down inflationary pressures. During the first five-year plan, 1951-56, the import surplus, financed in considerable part by blocked sterling balances accu-

mulated during the war, offset government deficits so that prices dropped (with a generous assist from two very good harvests). The argument of this section is well balanced, thorough and careful; he marshals the facts well to support each point. It is a more detailed study of Indian inflation than any other this reviewer has seen. The book will be of great value to those who want a detailed study of Indian inflation, or to those who seek a survey of monetary and income theory as it applies to inflationary problems of an underdeveloped area. The organization of the theoretical section is lucid and concise, but the presentation of the Indian material is disorganized and repetitive.

The appendix develops a statistical measure of inflationary pressure built on *ex post* data for private investment, government deficit and the export surplus. If the sum of these quantities rises relative to national product it is taken as an indication of inflationary pressures. Obviously this is true only if saving has not likewise increased relative to income, so the author assumes that planned saving is a constant proportion of income. While this assumption may have been valid for the period of wartime controls, it hardly seems warranted for the postwar period. In addition his measure suffers from an error of detail. It moves rapidly in the downward (wrong) direction during the worst part of the war inflation, and thus is positively misleading. The error is that the government deficit figure omits the large wartime supplies purchased by the government for Allied armies. These deficit-financed purchases were no less inflationary because they were handled outside the budget; he correctly discusses this problem in the text, but omits consideration of it in his statistical appendix with the result that his measure moves perversely. He fails to define exactly the components of this measure, and only by looking to the original sources of the data can one discover the exact definitions used. Aside from this laxness, the study is a very informative one.

WILLIS D. WEATHERFORD

Swarthmore College

East and West in India's Development. By WILFRED MALENBAUM. Washington: National Planning Association, 1959. Pp. xi, 67. \$1.75.

This concise monograph, which was published in the series on "The Economics of Competitive Coexistence," deals with a very important subject. It reviews critically India's five-year plans, its prospects for economic growth, and discusses aid to India from East and West. In the section on "The Challenge to the West" the important point is the one emphasized in the introductory statement by the Special Project Committee on the Economics of Competitive Existence: "Thus while raising the West's financial stake, thought might also be given to co-operation with the Indian leaders with a view to achieving not only numerical targets, but also to recapturing the broad intent of the Plan in a search for a development pattern consistent with Indian potential," (*i.e.*, less accent on heavy industry in the public sector, more emphasis on agriculture, small industry and the private sector in general).

The main subject of discussion is India's second five-year plan (1956-61), its size, its investment pattern and the greatly increased role of the public

sector. The author does not agree with the plan's emphasis on heavy industry and the expansion of the public sector in this field. He rightly points out that the plan underrated the importance of expansion in lighter industries and consumer goods production. Apparently, however, the author does not appreciate sufficiently the foreign exchange difficulties which have resulted from the investment pattern of the plan. India embarked upon development with unbalanced growth without the consequences, particularly for the balance of payments, having been properly examined. The foreign exchange requirements of the plan were greatly underestimated—the author speaks of the Planning Commission's optimism in its calculations of costs. As early as the second year of the plan it became known that the balance-of-payments deficit would greatly exceed the plan's estimate of \$2.3 billion; it will turn out to be nearly \$4 billion.

Because of the heavy drain on foreign assets strict import restrictions were imposed late in 1957. The decline in foreign assets was the result not only of substantial imports of capital goods in the private sector—which the author overrates—but also increased imports for investment in the public sector. Moreover, there were large general imports, which had been allowed in the wave of optimism left over from the comfortable balance-of-payments position during the first plan; and there also were large defense imports.

During 1958, the government had to make a decision to reduce the plan to the so-called "core" in order to reduce the drain on foreign assets (they declined by more than \$1 billion during the plan period, 1956 to 1961). However, any major change in the plan was limited by the large commitments incurred abroad, mainly by the public sector. The "core" included most of the important projects. Malenbaum is too pessimistic with regard to the effects of the reduction of the plan in the public sector, which in money terms will be about 4 per cent, or much less than the reduction in the private sector.

It is now estimated that 80 to 85 per cent of the physical targets of the plan will be attained and national income is expected to increase by about 20 per cent over the second plan period—which should be regarded as a good performance.

The chapter on the contrasting roles of foreign assistance is very informative in showing the coexistence of aid from West and East in India. Although the communist countries' assistance, which is concentrated prevalingly on heavy industry and oil, is more conspicuous than the assistance from democratic nations, which is spread over many fields of the Indian economy, this reviewer believes that the effect of this difference on Indian public opinion should not be exaggerated. Incidentally, Communist aid amounted to only about 18 per cent of total foreign aid, not including the U.S. substantial supplies of food grains under public law 480.

Writing before the third plan was formulated, Malenbaum suggests that greater emphasis should be given to labor-intensive activity, that government investment be focused more on specific bottlenecks, and a larger role be given to the private sector. He points out that such a shift would conform better to the actual pattern of savings and investment flows, and would mean a closer

approximation to the traditional role of the Indian government in economic matters. This reviewer agrees in principle with these views.

However, the outline of the third plan while aiming at self-sufficiency in foodgrains places strong emphasis on heavy and machine-building industry, in order that it may be possible to meet the requirements for further industrialization within ten years or so, mainly from the country's own resources. Of the total proposed investment of \$21 billion, \$13 billion has been assigned to the public sector. The plan assumes that the total foreign exchange requirements of more than \$6 billion will be provided from external aid. Sizeable credits have already been obtained from the Soviet bloc and large supplies of foodgrains are assured from the United States under public law 480.

Should India be unable to obtain very substantial assistance, the size of the plan will have to be reduced. The Western powers are faced with a very important decision, namely how much aid to provide for India in order to enable it to continue its development.

Space does not permit a review of various other subjects considered in this study, which is packed with ideas and information and which should stimulate further discussion of this vital problem.

ANTONIN BASCH

Washington, D.C.

Impact Multipliers and the Dynamic Properties of the Klein-Goldberger Model.

By ARTHUR S. GOLDBERGER. Amsterdam: North-Holland Publishing Co., 1959. Pp. 138. \$4.00.

This thorough and painstaking book fills a gap in the presentation of the noteworthy Klein-Goldberger econometric model of the United States.¹ It uncovers many of the economic characteristics of that model which had remained implicit in previous discussions.

After briefly reviewing the original Klein-Goldberger econometric model, the author derives and evaluates the "impact multipliers" of the model. These are the coefficients which describe the total response of the endogenous variables in the initial period to a unit change in one of the predetermined variables. In succeeding chapters the author analyzes the dynamic responses of the endogenous variables of the Klein-Goldberger model over short and long periods. The period-by-period predictive ability of the model is also investigated for the years 1929-1941 and 1946-1952.

This book can serve for practitioners of econometric forecasting as an example of the analysis necessary to illustrate the full implications of an econometric system and to obtain from it all the interesting results. For example, it is no surprise to learn that "impact" multipliers are less than final or "equilibrium" multipliers. However, it is interesting and useful to learn that the impact multiplier of government expenditures on GNP, with the given tax rates, is 1.23 while the final multiplier is 2.34. Similarly the other numerical

¹L. R. Klein and A. S. Goldberger, *An Econometric Model of the United States, 1929-1952*, Amsterdam 1955.

estimates of multipliers add to our factual knowledge of these significant coefficients.

One of the interesting results of the author's analysis is that the part of the model which deals with real variables is only loosely related to the price-explanatory part. It was also found, to paraphrase the result, that the model was larger and more complicated than it needed to be for the results obtained. These features of the model simplified its subsequent analysis considerably. They also contribute to the conclusion that much more investigation of the basic behavioral relations of econometric models is necessary. The author shows a full awareness of this conclusion.

R. S. ECKAUS

*Brandeis University and
Center for International Studies,
Massachusetts Institute of Technology*

Die sowjetische Wirtschaftspolitik am Scheidewege. By ERIK BOETTCHER. Tübingen: J. C. B. Mohr (Paul Siebeck), 1959. Pp. xvi, 307. DM 26.50.

This book falls into two basic parts: the first deals with the consequences deemed to flow from stringencies in urban labor supply; the second discusses the role of ideology in the formulation of Soviet economic policy. The first four lengthy chapters examine the elaboration of the planning idea, changing labor organization, the bottleneck in agricultural production, and the rationalization and "decentralization" of industry. The fifth and last chapter discusses ideology and economic policy.

The introductory chapter presents only in a cursory manner the underlying assumptions and the operation of planning. The problem of the interrelations between national, sector, and enterprise plan and between elaboration, implementation and controls of the plan as well as the detailed examination of the question of efficient allocation of resources (or of economic rationality) are taken up later, in Chapter 4, once the author has set forth his main thesis. This he does in Chapter 2, where he asserts that the USSR has been forced to pass, sooner than it might have liked to, from the *extensive* to the *intensive* phase of its industrialization. In the first phase accelerated economic development and high rates of growth could be secured via expansion of employment outlets and absorption of existing labor reserves. The underlying demographic data have however, been changed due to enormous war losses, resulting in unfavorable sex and age structure, falling numbers of females and youth of working age, and so on. In the condition of "forced" decreases in labor intakes in industry, and of the current slowing down of the process of transfer of labor from less productive branches (agriculture) to more productive ones (industry), the previous high rates of economic growth could be matched only via sharp increases in productivity, requiring more efficient use of the available means of production, modernization and overhauling of old equipment and installation of new machinery of a labor-saving type (automated plants and automated processes).

This is by now a familiar thesis which has often been discussed and exam-

ined in the West. It should, however, be noted at this point that scheduled improved utilization of the equipment available in agriculture and increased capital inputs in this sector may eventually more than offset the trend of falling rates of growth of industrial labor. Academician Strumilin estimates that by 1965, 12 million surplus farm workers and by 1970, 20 to 30 million surplus workers will become available in agriculture.

On the basis of an assumed labor stringency and the indicated entrance of the Soviet Union into the phase of its intensive industrialization, Boettcher forecasts an increase in real wages. Actually this forecast needs numerous qualifications. Let me note only that the current reforms of the wage system aim both at tightening cost control and increasing work intensity: the work norms are revised while the wage "fund" (*i.e.*, personal plus social wages) is not *increased* but *redistributed*. It is on the other hand true that wide discrepancies occur in practice between planned wage fund and actual payroll.

After examining probable changes in agriculture and industry and stressing the trend toward economic rationality in the intensive phase of industrialization, the author conjectures that in this particular phase of industrialization in the planned economy, just as in the free enterprise economy, coercive controls are bound to disappear. This is, incidentally, contrary to the Hayekian contention that planning is "the road to serfdom" and that coercion and planning are inseparable. Thus both Boettcher and Hayek establish direct though opposite connections between planned economic development and the liberty or freedom of the citizen. Boettcher assumes, somewhat like Isaac Deutscher but starting from other premises, that the whole structure of Soviet institutions must change as the economy penetrates the intensive zone of its industrialization. From stringencies in labor supply to increases in consumer sovereignty, to economic rationality, and to dismantlement of coercive controls, Boettcher passes finally to a so-called dilemma which, he states, faces the Soviet system, namely: How far should this new liberty be expanded in fields other than the economic ones? Alas, it seems to me that Boettcher places much too much weight on the questionable basis of labor shortage and that he goes far afield in his conclusions concerning the liberty of the Soviet citizen. Incidentally, increasing capital costs and the need for larger investments may, in a period of "intensive" industrialization, place new limits on the liberty of the individual as a consumer.

The last part of the work, even more speculative in nature, deals with the connection between Marxian ideology and industrialization, and with the operation of "laws" under socialism. On the question of industrialization, Boettcher oversimplifies the facts. Thus he writes that in the 1920's Trotsky saw the shortest way to socialism in the export of the revolution, Bukharin in the restoration of capitalism (!) (a controlled state capitalism), while Stalin saw it in industrialization. Boettcher lightly passes over the complex controversies on planning and seems to ignore that the Left opposition was designated at the time as "superindustrialist." In respect to the Soviet discussions on the operation of the law of value under socialism the author notes correctly that the Soviet planners and policy-makers have changed their beliefs in the

course of the planning era. The planners have abandoned their early confidence in their unlimited capacity to reshape their economy, and have discovered "objective laws," i.e., the fact that not everything is possible.

NICOLAS SPULBER

Indiana University

Ekonomicheskiye osnovy narodnokhozyaystvennogo planirovaniya v SSSR.
(Economics of National Economic Planning in the USSR.) By A. D. KURSKIY. Moscow: Gospolitizdat, 1959. Pp. 336.

This book consists of five chapters: (1) The law of the systematic development of and the planning of the national economy; (2) Production and construction planning and materials provision; (3) Planned labor and improvements in national welfare; (4) Planning of production expenditures, of prices and financing; and (5) Planned balance in the national economy.

Although the author attempts to present the principles, methods and technicalities of planning the national economy, his coverage is very inadequate. Especially, questions relative to problems of price formation, financing and the budget are treated very superficially.

Quite correct and to the point is the author's remark that "one of the basic principles of Soviet planning is the emphasis on the most important segments of the plan. In the systematic undertaking of this plan a preference is given to the development of those branches of the economy which will assure the fastest expansion of socialist production. To this type of production belong, primarily, all branches of heavy industry. All essential materials, labor and financial resources are concentrated to assure the smooth development of the major segments 'leading links' of the national economy" (p. 55). This statement refers not only to branches of the economy dealing with military requirements, but also to those concerned with scientific research. This, in part, explains Soviet achievements in the field of rocket armament.

Soviet writers are true to themselves when they discuss problems connected, in one way or another, with the Soviet military budget. Though 43 years have passed since the Communist revolution, all questions dealing with Soviet defense remain a state secret. Usually Soviet writers do not say anything at all about the military budget, or what they do say is in sharp contradiction with reality. The author's statement that in 1959 the Soviet government spent 14 per cent of the national budget for defense does not correspond to facts. The truth is that the Soviet unified budget also included the budgets of Union Republics with their local budgets. If local budgets are excluded, that is in relation only to the Union budget, defense expenditures are nearly twice as high. In this connection it is, however, important to note that all principal sections of the Soviet national budget—such as the national economy, socio-cultural projects, government and other expenditures—contain larger or smaller sums to be used for defense purposes. Naturally, this information is carefully concealed; but the history of the Soviet budget, and particularly of Soviet budgetary practices, presents ample material to determine approximately how large these sums may be. For example, according to careful estimates, the funds allocated in 1960 for the establishment of defense reserves—

material and food—represent nearly 6 per cent of the gross national product.

Some of the data and assertions of the author are pure propaganda as, for example, his statement that the Soviet Union is using about three-quarters of its gross national product for public consumption (p. 50), or that in 1958 the USSR surpassed the United States in milk and butter production and has thus attained the leading position in the world (p. 145).

Readers of this book will find little that is new, either in terms of data and its interpretation or in terms of approaches and treatment of the problems. What is presented is already well known. There is, however, a certain novelty in some of the franker admissions with which "the socialist economic system" is analyzed—something which earlier would have been impossible.

The author points out that the construction of the Orsk-Khalilovsk metallurgical combine cost 3.1 billion rubles, including incurred losses caused by a protracted building period which amounted to 1.8 billion rubles (p. 188). He also admits that at the present time (1959) the productivity of labor in industry in the USSR is approximately 2 to 2.5 times lower than in the United States, and 3 times lower in agriculture. Actually, the discrepancy in labor productivity is even greater, making it possible for the Soviet Union to constantly claim more significant advances in productivity.

In order to characterize the changes which have taken place in the USSR it may be pointed out that Stalin's name is mentioned in this book only once—whereas Khrushchev's is mentioned thirteen times.

T. SOSNOVY

The Library of Congress

Metropolitan Chicago, An Economic Analysis. By EZRA SOLOMON and ZARKO G. BILBIJA. Studies in Business, Graduate School of Business, University of Chicago. Glencoe, Ill.: The Free Press, 1959. Pp. xix, 208. \$7.50.

This study starts with the proposition that four basic sets of accounts are required for a comprehensive economic analysis of an area: employment, output, income, and saving. Solomon and Bilbija have put together a substantial collection of data, facing the usual difficulties of breaking out regional data, and of constructing sets of regional accounts which tie into national accounts. Without attempting to construct complete sets of accounts, they have presented a generally useful aggregative picture. The text is devoted largely to a descriptive analysis of the Chicago regional economy based upon the above four categories of data. Following are some of the main conclusions:

1. The ratio of the Chicago regional labor force to population is higher than for the country as a whole and for many other urban sections. The high ratio is ascribed to a high proportion of working-age population, and to a high participation of working-age population in the labor force. The reasons for and implications of the high participation rate are not made clear (does it, for instance, indicate a low level of college attendance?).

2. The Chicago regional economy is heavily industrial, with a relatively high proportion of employment in durable goods industries, chiefly metals manufacturing, which contribute 25 per cent of the wage-salary receipts in the region, and nearly 55 per cent of the region's "export receipts." Printing and

publishing, wholesale trade and retail trade are the three other largest contributors to "export income."

3. Productivity per man-hour (in value added) is about 11 per cent above the national average over-all, and 15 per cent above in manufacturing. This is ascribed to several factors, including the relatively advantageous industry-mix and the predominance of industries employing large amounts of capital.

4. Chicago per capita incomes are among the highest in the nation, owing to high labor-force participation, high level of productivity, and relatively high wage rates. Transfer payments are below the national average; this is ascribed to the lower proportion of old people in the Chicago population. Property income per capita approximates the national average and has increased substantially in recent years, but it is still substantially below such older eastern areas as New York, District of Columbia, Massachusetts, and Connecticut. Labor income per capita is found to be significantly above other leading areas including the New York metropolitan area, Connecticut, New Jersey, and the Philadelphia metropolitan area.

5. Although the data are not conclusive, they show that consumption as a proportion of income is smaller, and savings larger, than for the country as a whole. "In 1955, Chicago had 3.69 per cent of population, 5.00 per cent of disposable income, and generated 7.16 per cent of total personal saving in the nation." The high savings ratio is attributed in part to the fact that a "much smaller proportion of disposable income in Chicago is used in the acquisition of new and used automobiles as compared to the nation as a whole." Personal taxes per capita paid to the federal government are higher than for the nation, but state and local personal taxes are somewhat lower, owing to the smaller use of personal taxes by Illinois and Indiana state and local governments.

Part of the high-level savings has in recent years found an outlet in a higher-than-national-average rate of residential construction. But prior to 1952, the rate of residential construction, relative to population growth, was lower than the national average. Why the shift? The authors find a possible explanation in the behavior of rents; after 1952, rents in Chicago rose much more rapidly than in the rest of the United States (no explanation offered).

6. Indications are that Chicago in the future will depend increasingly on highly specialized production in the metal-working field and in printing and publishing; a relative decline is projected in most other forms of manufacturing activity.

7. The Chicago economy is more recession-sensitive than the country at large, owing to the predominance of durable goods manufacturing and to the fact that secular growth has been somewhat slower than the national average. An interesting sidelight, for which no explanation is advanced, is that in the past two recessions (1954 and 1958) Chicago unemployment reached a peak somewhat later than in the nation.

The study is concerned with the aggregate magnitudes of the whole region and the analysis is heavily on the descriptive side. There is no attempt to break down regional aggregates to show the development of different parts of the region; yet to come are studies with the wealth of insights into the intra-regional structure afforded by the recent studies of the New York metropolitan

region directed by Ray Vernon under the sponsorship of the New York Regional Plan Association.

There is room for argument over methodology at several points. One of this reviewer's principal doubts concerns the use of the old "location quotient" to distinguish between "city-forming" (export) industries and "city-serving" industries. An export balance for an industry X is said to exist if the ratio of Chicago employment in X to Chicago population exceeds the ratio of national employment in X to national population. My opinion is that this dull tool can obscure so many important relationships between the regional economy and the rest of the world, and can lead to so many erroneous impressions, that it is better not used at all. To take a simple case in point, it is conceivable that the analysis might show no export balance, or even an import balance, for a regional industry whose entire output was exported. I hasten to add, however, that the authors are aware of the imperfections of the tool and make some refinements in it designed to remove some of its more obvious crudities.

On the whole, the authors have done well and skillfully what they have set out to do, and their work is a significant contribution to the rapidly growing literature on metropolitan economic analysis.

LYLE C. FITCH

City of New York

Statistical Methods; Econometrics; Social Accounting

Soviet Statistics of Physical Output of Industrial Commodities, Their Compilation and Quality. By GREGORY GROSSMAN. A Study by the National Bureau of Economic Research. Princeton: Princeton University Press, 1960. Pp. xiii, 151. \$4.50.

This is the first of a projected series of monographs on economic growth in Soviet industry, agriculture, and transportation as reflected in the statistical record. Logically enough, the first study appraises the statistics themselves. It is limited to individual series of industrial output, excluding the question of aggregation and general indices.

The first part covers the history of the USSR Central Statistical Administration; industrial statistics in the light of Soviet ideology, purposes, and planning; problems of methodological uniformity, definition, and classification; continuous series and small-scale industrial censuses. Two useful charts illustrate the pre- and post-1957 paths by which industrial output data flow from their source in the undertaking to the user agencies and to publication.

The second part appraises the quality of data. It covers Soviet concern with errors and reliability; mechanization (its lack) in data processing; reporting, sources of distortion, and checks to distortion at the enterprise level; distortion at intermediate levels in the economic administrative hierarchy and the statistical system; distortion and ambiguity in published data.

Grossman arrives at the following conclusions: The published statistics of industrial output make some sense and meet certain rough tests of consistency; distortion of information exists at the level of the enterprise but has definite limits; upward distortion is probably more common than downward distortion.

tion; distortion is probably much the same from year to year so that time comparisons are not necessarily perilous; unreliable data can often be adjusted to yield more or less satisfactory figures; there is probably no numerical falsification of published data, but suppression, selective release, and ambiguity combine to give a distorted picture of reality.

The author is rather optimistic about making use of Soviet industrial statistics in research, and notes that distortions which receive wide publicity in the USSR and are a definite hazard for the Soviet administrator or planner may be within acceptable limits of tolerance for the outside student.

The exhaustive bibliography highlights the inadequacy of basic source material. It is depressing to note how much information must be culled from Munich émigrés, *Pravda feuilletons*, and even the humor magazine *Krokodil*. Grossman, carefully piecing this jigsaw-puzzle together, has wisely refrained from generalizations which the fragmentary evidence cannot support. As a result, there is no clear conclusion as to the net amount and direction of bias. One might be tempted to twit the author for the apparent contradiction between reporting above-standard production as *brak* (spoilage, rejects) in order to write-down output (p. 82) and counting *brak* as valid finished output in order to write-up production (p. 94); this would be unfair since both things do happen.

As a guide to the American user of Soviet statistics, the volume serves to put the student on guard without being overly discouraging. There is so much concern with methodology, however, that the paucity of actual statistics is underemphasized. The absence of data can be quite as frustrating as the distortions in published material.

The author has felt that comparisons of Soviet and Western methodology were beyond the scope of his study. Sooner or later such comparisons should be made, not to show that one or the other is superior but to show how many problems they have in common. The problem of making an output index for a product which comes in a variety of styles, sizes, and qualities, for example, is by no means exclusively Russian. The author's recognition that this is not a question of communism vs. capitalism but of command economy vs. market economy is very much to the point, as are his brief digressions on command-economy situations in Nazi Germany and in British aircraft production statistics during the second world war.

A somewhat broader survey might have been more appropriate in view of the projected scope of the monographs which it precedes. All the same, Grossman has written a useful and perceptive book.

A. PETER RUDERMAN

Washington, D. C.

Econometrics: An Introduction to Maximum Likelihood Methods. By STEFAN VALAVANIS. Edited, from manuscript, by Alfred H. Conrad. New York: McGraw-Hill Book Co., 1959. Pp. xvii, 223. \$7.00.

In the past two decades or so we have seen a tremendous development in statistical methods in economics, and it is now extremely difficult for those who are not trained in mathematical statistics to see the real meaning and im-

plications of the recently introduced, highly refined statistical techniques in handling economic models. This is particularly true of the methods for estimating simultaneous linear economic relationships, mainly developed by T. W. Anderson, T. Haavelmo, L. Hurwicz, T. C. Koopmans, J. Marschak, H. Rubin and others who had been more or less associated with the Cowles Commission at the University of Chicago. The book under review was written by a brilliant young econometrician with the intention of introducing modern econometric methods, with an emphasis on simultaneous estimation, to an "intelligent layman" who has no sizable knowledge of mathematics or is not accustomed to thinking in logical terms. The author writes in the Preface that:

It [the book] has one unifying idea: to reduce to common-sense terms the mathematical statistics on which the theory of econometrics rests. . . . Besides restoring the self-assurance of the ordinary intelligent reader and helping him discriminate between really important developments in econometric method and mere mathematical quibbles, I have tried to be useful to the teachers of econometrics and peripheral subjects by supplying them with material in "pedagogic" form. And lastly, I should like to amuse and surprise the serious or expert econometrician, the connoisseur, by serving him familiar hash in nice new palatable ways but without loss of nutrient substance.

Chapter 1 briefly touches on the fundamental propositions of econometrics and the construction of an econometric model. Chapter 2 goes on to the problem of estimating parameters in the model, and the maximum likelihood method is introduced; some statistical criteria are heuristically discussed. Chapter 3, on bias in models of decay, introduces the concept of *conjugate samples* to discuss the biasedness of the maximum likelihood estimate in an autoregressive single-equation model. The reviewer unfortunately fails to understand the author's claim that the concept of conjugate samples would serve as an example of reducing intricate theorems to common-sense terms.

In six chapters, 4 to 9, the author discusses the estimation of simultaneous linear structures—a central theme of modern econometric methods; the exposition, in particular with reference to the concept of identification, is extremely lucid. The treatment of limited-information maximum likelihood estimation in Chapter 8, however, is rather ambiguous. The limited-information method is explained in terms of a water-pipe problem. It seems to the reviewer that the author's illustration is equally applicable to many similar problems; it does not necessarily illustrate the reason why the limited-information estimate has to take the form derived by T. W. Anderson and H. Rubin.

The last three chapters are devoted to various topics in econometrics, such as linear confluence, partial correlation, bunch-map analysis, factor analysis, correlograms, seasonal variations, trends, and diffusion indices. The subjects are selected *ad hoc* and the exposition is superficial. Appendices cover technical aspects of some of the subjects discussed in the main text.

Perhaps because of the author's death before the book went through the press, there are some minor technical mistakes and ambiguities (e.g., in the treatment of underlying assumptions or of identification), but the book as a

whole is well organized and the references for further reading at the end of each chapter are carefully selected; it is not only a pleasure to read, but the reader may be able to get a fairly well-balanced glimpse of what modern econometric methods are about. The author has realized surprisingly well his intentions as stated in the Preface, except for the last one. To those who are seriously interested in the subject, however, the book is hardly recommended. The common-sense interpretation, as presented in this book, is unreliable and superficial; it easily leads to many fallacies. After all, the mathematics required to understand the now classical Hood and Koopmans' *Studies in Econometric Methods* (New York, 1953), reviewed by M. Hastay in the *American Economic Review*, March 1954, are not terribly difficult to master; and the reviewer believes that the principle of round-about production may well be applicable in this case.

HIROFUMI UZAWA

University of California, Berkeley

Preface to Econometrics. By MICHAEL J. BRENNAN, JR. Cincinnati: South-Western Publishing Co., 1960. Pp. x, 419. \$6.50.

Econometrics, which has gradually emerged from its esoteric status to become a widely used method of economic research, has unfortunately not yet succeeded in gaining acceptance as a standard subject in the undergraduate curriculum. This fact means not only a significant gap in economic education, but also frequent frustration on the part of students, who are now encountering more and more econometric terminology in books and periodicals. A fundamental condition for the widespread offering of econometrics at the undergraduate level is of course the cultivation of a sufficient number of qualified teachers, but the publication of suitable textbooks in this field is a prerequisite no less important. For this reason alone, the book under review should be a welcome contribution.

Aimed at readers without advanced mathematical background, this text presupposes only a knowledge of elementary algebra, elementary statistics and basic economic theory. The main body of the book is, besides, preceded by a well-written introduction in which the author (a) clarifies the differences between econometrics on the one hand, and mathematical economics and statistical economics on the other; and (b) outlines the general procedure of scientific investigation and model construction. This prepares the readers for the chief contents of the book which are divided into five parts.

Part I is concerned with variables, functions, systems of equations and determinants, and Part II presents the basic elements of calculus. Together, the first two parts occupy half the length of the book. After a short general discussion of econometric models in Part III, methods of statistical inference are then explained in Part IV, where the author devotes about a hundred pages to probability theory, sample theory, regression and correlation analysis. The problem of autocorrelation and the mean-square-successive-difference method of testing its existence are also treated in this part in connection with time series. Finally, in Part V, some recent developments and specific aspects of

econometrics are discussed, including the problem of identification, and decision under uncertainty. There is a four-page bibliography at the end.

From a pedagogical viewpoint, this book has considerable merit. Throughout the volume, the discussion of each set of mathematical techniques is followed immediately by illustrations of practical applications. This enables the students to sustain their interest by constantly observing the relevance of mathematical methods to economics. Exercises—of which this reviewer wishes there were more—are given in most chapters, and answers to odd-numbered problems are supplied by the author. The students can thus check the correctness of their own solutions without having to consult the instructor. As to exposition, except for certain places where the author shows a tendency to achieve brevity at the expense of clarity, the writing is very lucid.

The distribution of space among the various topics, however, leaves something to be desired. Recognizing that the formulation of theoretical models is an essential step in econometrics, this reviewer nonetheless feels that the weight (50 per cent) assigned to mathematical economics as against statistical inference is too heavy. This belief is strengthened by the fact that some very elementary materials in the first half of the book are given unnecessarily detailed explanations (e.g., functions, graphs and simultaneous equations), whereas some more difficult materials in the second half are dealt with either too briefly to be intelligible (e.g., the rank criterion of identification) or too superficially to be of real use to the students (e.g., multicollinearity). Many aspects of statistical theory, it would seem, could well stand some amplification; if accompanied by an appropriate reduction of the first two parts, this would substantially enhance the usefulness of the book without unduly adding to its size.

Another flaw lies in the author's failure to mention the names of certain mathematical techniques discussed in the text, such as Cramer's Rule (p. 98), Lagrange multiplier (p. 183), and the rank criterion of identification (p. 380). It is difficult to understand why the author would want to deny the readers the knowledge of convenient, nay, standard ways of referring to these methods.

In general, however, Brennan's book will serve its intended purposes well. Indeed, the relative scarcity of suitable textbooks in this field adaptable to undergraduate instruction should make it a most promising candidate for adoption in courses in mathematical economics (using the first half of the book) as well as econometrics (using the entire book, with emphasis on the second half).

ALPHA C. CHIANG

Denison University

Economic Systems; Planning and Reform; Cooperation

Ekonomicheskaya effektivnost kapital'nykh vlozhenii i novoi tekhniki. (The Economic Effectiveness of Capital Investment and New Technology.)

Edited by T. S. KHACHATUROV. Moscow: Izdatel'stvo Sotsial'no-Ekonomicheskoi Literatury, 1959. Pp. 615. Rbl. 16.20.

This book represents one more episode in the struggle between the mon-

goose of logic and the cobra of ideology that has raged among Soviet economic theorists for the past three decades. Specifically, it is another episode in the debate concerning criteria for rational investment choice. The essence of this debate, as Grossman has characterized it, is the "conflict . . . between the Marxian conception of value and the logic of the allocation of scarce resources to achieve posited goals; more precisely between the absence of a value attached to capital *as such*, and the necessity for Soviet planners to husband their very scarce capital resources."¹

The conflict began when the interest rate was purged as being un-Marxist in the early 'thirties. But no capital charge at all is equivalent to an effective interest rate of zero. It requires no especial genius to perceive that a zero interest rate leads to absurdly capital-intensive investment decisions in the context of a capital-poor country. To avoid this, project-making engineers employed various surrogates for the interest rate on an *ad hoc* basis throughout the 'thirties and 'forties. After the war, the use of such quasi-interest rates (the most common was euphemistically dubbed the "coefficient of relative effectiveness," here abbreviated as CRE) and the economists who sought to justify those rates, fell under savage attack from those guardians of doctrinal purity, the political economists. Charges of everything from logical inconsistency to political deviation were hurled at the defenders of the CRE. "Since the end of 1949," wrote Grossman in 1953, "the controversy has remained smoldering, flaring up occasionally in isolated sectors, producing recantations and reaffirmations, rejoinders and retreats. . . the air is still full of uncertainty, with no discernible signs of resolution either by intellectual agreement or by authoritative dispensation."²

Certain engineers surreptitiously continued to use the discredited CRE or its reciprocal, the period of recoupment (POR), but they were handicapped by the absence of any officially prescribed minimum rate or maximum pay-off period. The result was that the POR used in practice varied from 3 to 25 years. Other project makers made a practice of choosing the alternative that minimized current operating costs. There was, however, a general cognizance that scarce capital was frequently being misallocated. After Stalin's death in 1953, several unsuccessful attempts were made to resolve the issue, but, by 1958, the situation had not significantly improved.

In an attempt to improve the unsatisfactory state of affairs, there was convened in Moscow in June 1958, the All-Union Scientific-Technical Conference on Problems of Determining the Economic Effectiveness of Capital Investment in New Technology in the Economy of the USSR.³ The book here reviewed contains 40 papers presented at this conference, 37 shorter contributions to the discussion, and a list of the conference's recommendations.

The chief immediately positive results of the conference were its recom-

¹ Gregory Grossman, "Scarce Capital and Soviet Doctrine," *Quart. Jour. Econ.*, Aug. 1953, 67, 311-12.

² *Ibid.*, p. 337.

³ The papers were summarized in *Voprosy Ekonomiki*, 1958, No. 9, pp. 119-62.

mentations; these laid the basis for the recently published "Standard Method of Determining the Economic Effectiveness of Capital Investment and New Technology in the National Economy of the USSR."⁴ Substantially, the recommendations embrace the position of T. S. Khachaturov, a veteran of the controversy who headed the organizational committee of conference and edited this book.

The recommendations finally accorded the rights of Soviet citizenship to the coefficient of effectiveness. Since the CRE has been in standard, albeit *sub rosa*, use for a quarter century, this final blessing can hardly be termed an undiluted creative triumph for Soviet political economy. Of greater practical significance was the specification of how the normative coefficient of effectiveness (NCE) should be determined. According to the recommendations, the coefficient of effectiveness is to be calculated on three levels: (1) The coefficient of absolute effectiveness (CAE) is the ratio of the annual physical growth of national income to the capital that brought about that growth. This definition is ambiguous in that it is not clear whether the CAE is equal to the ratio of *all* the increase in output in a given year to the increase (lagged) in capital stock (the marginal output-capital ratio), or to the partial derivative of output with respect to capital (marginal productivity of capital). Additional ambiguity is introduced by the confusion over the proper weights to be used in aggregating the diverse physical components of "national income." (2) The NCE for each branch of the economy is to be established in such a way as to equilibrate the exogenously determined volume of investible funds available to each branch with the demand for those funds within the branch. (3) The CRE comeasures the initial capital outlays and the average annual operating outlays for different technological variants of producing a *given stream of output*. As formulated, the CRE is applicable not to decisions about *what* to produce, but only to decisions about *how* to produce a posited stream of output.

Another step forward was the rehabilitation of compound interest, long anathema, as a means of rendering commensurable capital outlays that may occur at different points of time. Its use is limited to this application since operating costs are taken as an annual average, and output is identical for all technologies.

Essentially, the formal conclusions of the conference, as embodied in the recommendations, have restored matters to what they were before the onslaught of the doctrinal purists. Aside from legitimizing the CRE, the most positive contribution of the conference was to establish rules for computing the NCE for each branch, and to clarify the manner of calculating the CRE. Much, of course, remains to be done. The extent to which the coefficient of effectiveness should enter into decisions as to the composition of the final bill of goods remains unspecified. The degree to which indirect capital requirements of alternative technologies should be taken into account is vague. The concepts of the productivity of investment, and the opportunity cost of its use

⁴ *Tipovaya metodika opredeleniya ekonomicheskoy effektivnosti kapital'nykh vlozheniy i novoi tekhniki v narodnom khozyaistve SSSR*. Moscow: Gosplanizdat, 1960. Pp. 21.

are confused. Logical inconsistencies pervade the method of calculating the CRE; *e.g.*, the practice of including the undepreciated part of an existing machine's initial cost in the capital outlay of the new machine whose installation as a replacement is being considered. Considerations of obsolescence and replacement are hopelessly confused, and the factors of uncertainty and time horizons are entirely ignored. The most serious shortcoming of all is that the irrational system of Soviet price formation remains unchallenged in the conference's recommendations. Recognition of this irrationality is implicit in the admonition that all conclusions reached on the basis of CRE calculations must be qualified by qualitative considerations of "deficitness" of certain inputs.

It is impossible here to do justice to the various papers presented at the conference. Most significant was the atmosphere of the debate; charges of political deviation and ideological treachery were entirely absent. The extreme critics of the CRE, such as P. S. Mstislavskii, were not there; the moderates, typical of whom is Khachaturov, carried the day. And the radicals were well represented by Vaag, Atlas, Malyshev, Lur'e, Novozhilov, and Kantorovich. It may be significant that Academician V. S. Nemchinov, certainly one of the most powerful and influential Soviet economists, lent his support to Novozhilov's ingenious scheme to rationalize the whole Soviet price structure.

It is a pleasure to report that the mongoose appears finally to be getting the better of the cobra.

RICHARD W. JUDY

*Russian Research Center
Harvard University*

Value and Plan: Economic Calculation and Organization in Eastern Europe.

Edited by GREGORY GROSSMAN. Berkeley and Los Angeles: University of California Press, 1960. Pp. viii, 370. \$7.00.

The years since the death of Stalin have found the Western world paying increased attention to what is going on in the Soviet Union and Eastern Europe, particularly in the field of economics. The volume here reviewed, a study of the nature of the Soviet-type economic system, is a case in point.

More than anything else, this volume is a response to the fact that Soviet (as well as Polish and Yugoslav) economists in the post-Stalin period have been writing in greater volume and with more candor about their system than at any time since the early 1930's. These primary source materials of a theoretical nature warrant analysis and evaluation in their own right; but they also supplement the descriptive and statistical information on which we continue to rely heavily for interpreting Soviet economic performance and the nature of the system. All of these approaches to an understanding of basic Soviet economics appear in this excellent collection of 14 essays which were originally presented at a 1958 conference of 50 economists and one sociologist held in Berkeley.

With the exception of the essay by the sociologist Reinhard Bendix on the cultural and political setting of economic rationality, the volume is an examination of economic systems and problems from a strictly economist point of

view. For the most part, this view is the relatively static one of price, production and distribution theories, with the result that the question receiving most attention is whether economic decision-making in the Soviet Union and Eastern Europe satisfies "optimal" conditions and is therefore "rational." This focus is laudable (however limited) because the theoretical issues are complex—the more so in a comparative study. They therefore fully merit the careful and discursive treatment they receive. One effect of this orientation is that the volume is a good deal more cohesive than otherwise might be expected from 14 essays of individual authors—a tribute also to the skill of Gregory Grossman, who conducted the conference and saw the essays into print.

By the same token, however, the volume is forced to deal only secondarily with the dynamic problems of industrialization and economic development. But even here, the clarification of basic theoretical issues (in static terms), together with the exploration of problems of economic structure and organization, throws considerable light on the process of economic change under Soviet conditions.

Is there an underlying rationality to economic decision-making in the Soviet Union and Eastern Europe? Most of the authors think so, but differ as to the meaning of the expression and the assumptions that ought to be made. Concerning the nature and expression of "final preferences," for example—Alfred Zauberman sees a continuing dominance of the planners over the consumers; P. J. D. Wiles doubts that the planners know what they want; J. S. Berliner suggests that they need to have only a rough idea of what they want; and Leonid Hurwicz and others simply build a "planners' utility function" into their discussions.

Concerning the problem of resource allocation—all participants see a growing awareness on the part of Soviet (and, to a greater extent, Polish and Yugoslav) economists of the need for criteria which accurately reflect real scarcity relationships. The basic ideological dilemma is discussed by Zauberman, centering on the role of the "law of value" under socialism; J. M. Montias traces in fascinating detail the development of ideas on the pricing of material inputs and investment goods in Poland; D. Granick, J. P. Hardt and Holland Hunter respectively discuss related problems for the Soviet Union in industrial technology, electric power and transportation, and location; and R. W. Campbell evaluates Soviet accounting methods. If there is a consensus in the matter, it is that broad factor interrelationships have somehow made their influence felt, despite the crudity of decision-making instruments, and that there consequently might be a danger in overestimating the practical effects of the theoretical modifications currently being proposed. (Considering the interest in problems of resource allocation in this volume, it is unfortunate that no real attention is given to the related questions of wage determination and labor recruitment.)

The recognition that rationality of economic decision-making involves the totality of interrelationships between final preferences and resources, leads much of the discussion to the question of economic structure, centering on the implications of the 1957 reorganization of the Soviet administrative and planning framework. Michael Kaser describes the essential features of the reor-

ganization, and R. Bićanić presents comparable information on the structure of the Yugoslav economy.

The theoretical and practical problems of economic organization are formulated in a variety of ways—in terms of centralization vs. decentralization, “command” vs. “market” control, the production principle vs. the territorial principle, the function of prices, and the role of the enterprise. Wiles, Hurwicz and Benjamin Ward discuss various models; Donald Hodgman examines the particular problem of monetary controls under central planning; and everyone else makes a contribution from his own particular vantage point.

The general conclusion is that if economic decision-making is to become more “rational” in the Soviet Union, it will be through refinements and modifications within the essentially centralized structure, rather than through the use of prices or other indirect guides to microeconomic behavior, such as in Yugoslavia. The vital question of whether the Soviets actually will be able to bring about these refinements and modifications, so as to increase the effectiveness of economic planning and administration, remains essentially unanswered, although the contributors to this volume see tangible progress in this direction.

WARREN W. EASON

Princeton University

Business Fluctuations

The Wage-Price Problem. By JOHN M. CLARK. [New York]: The American Bankers Association, 1960. Pp. vi, 68.

This short monograph by the dean of American economists was commissioned by the Committee for Economic Growth without Inflation of the American Bankers Association to provide an “objective, balanced synthesis” of recent thinking on the wage-price spiral. The monograph covers familiar territory and says very little that has not already been said many times. What distinguishes it from many of the others on the same subject is that it is calm, reasonable and, of course, beautifully written.

Professor Clark joins the long list of economists who believe that there is such a thing as a “pushed-up” inflation, that labor and management are jointly responsible for it, that it has been in evidence in recent years in the United States, and that steps should be taken to control it. Although it is much more moderate than the classical demand-pull inflation, the new inflation is cause for concern because it may be a problem for an indefinitely long period. However, he does *not* say that the new inflation will necessarily be converted into a gallop or that it will significantly impair growth. He objects to it largely on the ground that it will have undesirable distributional effects and may impair the nation’s competitive position in international markets. A spontaneously stable price level would be more favorable to growth than creeping inflation, but he prefers a mild inflation to the consequences of the restrictions that would be necessary to stamp it out.

Since the pace of the new inflation in this country has been slow, Clark sees no reason for trying to eliminate it overnight, but he believes it would be

desirable to take more effective action than has been taken thus far. Restrictive monetary and fiscal policies should not be used because they create excessive unemployment. Wartime price and wage controls might be fatal to the essential character of the free enterprise system; in any case, they would probably not be able to cope with a slow upward price creep. Fragmentation of oligopolistic industries is probably impractical; moreover, there is considerable doubt that it would accomplish very much. Breaking up labor unions would be "unthinkable" on political grounds, while other feasible action in the labor field, e.g., internal reform of union abuses, might increase rather than decrease the cost-raising pressures of unions. In the end, Clark is left with voluntary restraints and persuasion to deal with this intractable problem. He urges experimentation on a wide front, using a combination of investigation, consultation and education by government fact-finding boards, cabinet committees, and private research organizations to induce voluntary adoption of less inflationary behavior on the part of unions and management. If this is a mild and somewhat anticlimactic recommendation, Clark reminds us that "remedies should be proportionate to the severity of the problem."

JOSEPH A. PECHMAN

The Brookings Institution

Der Konjunkturtest: Eine neue Methode der Wirtschaftsbeobachtung. By WILHELM MARQUARDT and WERNER STRIGEL. Schriftenreihe des Ifo-Institutes für Wirtschaftsforschung no. 38. Berlin: Duncker & Humblot, 1959. Pp. 223. DM 28.—.

Statistics, in spite of all efforts to achieve greater speed and broader coverage, has not succeeded so far in meeting the continuously growing demands of cyclical and market research. Since the reason for this does not lie in a lack of intelligence or diligence of statisticians but is mainly due to the limitations of the instruments for collecting data, it was necessary to find a simplified procedure for supplementing traditional statistics by sending out an advance patrol—a patrol which might yield deeper insight than the rarely reliable advance-guard of "preliminary" figures.

In order to fill this gap the Ifo-Institute for Economic Research, Munich, started ten years ago in West Germany a novel monthly questionnaire called *Konjunkturtest* (business test). This especially arranged survey serves to obtain economic facts beyond those which up to now had been collected by official statistics and professional organizations. The method is to gather statements at monthly intervals from a representative number of firms about the tendencies of selected economic variables in various industries and trades and about the views and expectations of entrepreneurs. Quantitative statements are not asked ("*statistique sans chiffres*"). The simplified questions aim to find tendencies only, mainly changes as against the preceding month, *i.e.*, increase, decrease, or no change.

Up to 1958 this method of obtaining a system of short-term economic indicators had been adopted by 21 countries, 12 of which apply it in the original Munich way, while the others, mostly following a French pattern, use slightly divergent procedures. The amazing outcome—besides the rapid dissemination

of the results of a rather simple survey technique—is the unexpected fertility of the business-test approach that has been revealed for so many fields of study in statistics, economics and econometrics. The quantification of qualitative information, the aggregation of microeconomic data, the sample design are all problems of statistical importance which are dealt with adequately in this book. Because the results for different variables supplement and control each other and can be checked, additionally, by certain other data, they have proved suitable for giving an up-to-date and valid picture of reality.

The usefulness of the method for economic diagnosis has been studied and recognized by such an important body as the Economic Commission for Europe, Geneva. It is true, however, that, so far, in a period characterized by steady upward trends it could not be proved conclusively that the test approach is more appropriate than other methods for finding the turning points of the cycle. But that is no serious objection against making an effort to broaden and improve our empirical knowledge as best we can.

Beyond its practical use the business test facilitates model building and the testing of economic hypotheses by providing empirical data which otherwise would hardly be available. It deals with *ex ante* and *ex post* relations on a microeconomic as well as on a macroeconomic level. By learning about the reaction patterns of entrepreneurs the investigator also learns what is the forecasting reliability of their expectations and anticipations and is protected from taking them at their face value.

The authors of the present book are very competent to treat this subject because they have been in charge of the current survey in the Munich Institute since its beginning. They give a comprehensive description of the motives, the techniques, and the history of the development of the business-test method in West Germany and abroad. They critically evaluate the results hitherto obtained, but at the same time they are very optimistic with regard to the prospects of further research. They offer an outlook on those theoretical issues on which the business test seems to throw light. Their lucid presentation is backed by numerous tables, figures, and references to a vast literature. The book is well furnished with a bibliography of 100 monographs (58 in German, 26 in English, 9 in French, 7 in other languages).

LOTHAR BOSSE

*Austrian Institute for
Economic Research,
Vienna*

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

British Monetary Experiments 1650-1710. By J. KEITH HORSEFIELD. Cambridge: Harvard University Press, 1960. Pp. xix, 344. \$7.50.

Textbooks frequently begin the economic history of modern Britain with the industrial revolution and the "new economics" of Adam Smith. By contrast, the pre-industrial era of the sixteenth and seventeenth centuries has been referred to by F. J. Fisher as "The Dark Ages in English economic his-

tory."¹ Historical continuity has been weakened by this division, not so much by changes in historical interpretation as by changes in historical method. In brief, a widening chasm has been observed between the literary-humanist approach to the earlier period and that of quantitative measurement and economic analysis to the latter period.

Mr. Horsefield has combined these two methods with remarkable success in his study of British monetary experiments. On the side of literary source materials, a new pamphlet literature grew up after the Restoration which reflected the vigor and innovating propensity of the age. The vast quantity of this material—over 600 items in the author's bibliography—reminds us that Dr. Johnson's expletive, "The age is running mad after innovation. . . ." is equally descriptive of Defoe's England. Among the contributors to this monetary literature were Newton, Locke, Defoe, Wren, Petty, North, Cary, Law, Barbon and Child. Statistical materials—both public and private—also became more abundant after the Restoration. In Part I the author provides a statistical framework for his study in terms of price and monetary data. This, together with the tools of economic analysis, enables him to evaluate the merits of numerous monetary proposals.

An introductory chapter reviews the chief monetary developments of the period 1650-1710. Most attention is devoted to these developments in the decade of the 1690's, and especially the years 1694-96. These three climactic years witnessed the founding of the Bank of England and the Bank of Scotland, the recoinage of silver, the revaluation of gold coins, the establishment of land banks, the suspension of cash payments by the Bank of England, and the introduction of Exchequer Bills.

Part II is concerned with silver and the controversy over recoinage which reached a height in 1695. The "Locke-Lowndes" controversy over possible devaluation of the currency is considered chiefly from the standpoint of inflation, deflation, and the balance of payments. In the end the Locke school won, and the recoinage of 1696 restored silver to its previous mint standard, not, however, without economic hardships. Besides silver, the gold guinea (Part III) was a supplementary currency whose behavior in the 1690's is reminiscent of the bimetallic problem of the nineteenth century.

Part IV takes up a variety of paper money schemes. The projectors of these schemes were unanimous in their claims that banks would increase the supply of purchasing power, provide working capital for an underemployed labor force, and thus stimulate manufacturing and trade. Horsefield says that most of these projects "were based on tangible assets such as commodities or land, or with predictable money flows such as the public revenue. Not until the last quinquennium of the century was it seriously contemplated that a public bank might have a proportionate reserve, as did the goldsmiths."

Of the seven types of banks that were proposed from 1650 onwards, the author singles out five for special treatment: First, Lombard (or Lombard) banks, an outgrowth of pawnbroking, issued notes on the security of goods.

¹ F. J. Fisher, "The Sixteenth and Seventeenth Centuries: The Dark Ages in English Economic History?" *Economica*, New Series, Vol. XXIV, No. 93 (February, 1957), pp. 2-18.

Second, there were sixty-odd plans for capitalizing government revenues. Third, the Bank of England is viewed within the context of numerous monetary experiments and the contemporary economic scene. The reader will gain new insights into the evolution of the project which became the Bank, the expansion of its note-issue, the nature of its assets, and the extent to which it functioned as a central bank. Fourth, there were other projects for commercial banks, such as country banks and schemes for transferring funds from place to place. The Orphans' Bank, Million Bank, and Bank of Scotland are included in this category. The fifth type consisted of land banks.

Horsefield is interested in the monetary experiments that failed as well as those that succeeded. This is not merely an antiquarian interest, for he finds that nearly all of the innovations emerged from the writings of men whose projects met with failure. This applies to four land banks, of which three were based on the ideas of Hugh Chamberlen, who planned to issue legal-tender notes representing the capitalized value of future rents. Despite specious arithmetic and the lack of provision for cash reserves, Chamberlen's projects enlisted considerable support from English landlords.

The author's summary and conclusions appear in Part V. With reference to money, gold and international trade, he finds writers who among other things went a long way towards understanding the quantity theory of money and the relationship between purchasing power parity and the exchange rate. With reference to banking, paper money and inflation, answers from contemporary writings are found to such questions as what is a bank for, what were the essentials of a bank, why did the Bank of England and the Bank of Scotland succeed, why did no such institutions emerge before 1694, and why did none successfully follow them. Ten appendices and a most exhaustive bibliography complete this work.

By combining the methods of historical investigation and economic analysis, Horsefield has made an excellent contribution to monetary history and the history of economic thought.

RICHARD B. SHERIDAN

University of Kansas

Politica monetaria. By GIUSEPPE MIRABELLA. Palermo: Seminario di Economia Politica e Scienza delle Finanze dell'Università degli Studi di Palermo, 1959. Pp. 330.

The primary objective of this study is to analyze the changes which have occurred in the development of monetary policy during the past decades—from an earlier, almost total reliance on discount and interest rates as instruments of monetary and credit policy to the growing variety of regulatory weapons currently at the disposal of monetary managers.

Recognizing the importance of financial factors in the shaping of current economic events, Professor Mirabella begins his analysis with a review of the efforts made in recent years by economic and monetary theorists to understand more fully and to define in more precise quantitative terms the factors involved in the achievement and maintenance of monetary equilibrium. In that

connection he presents, in the first part of his monograph, a detailed and thoughtful summary of the work of Koopmans, Holtrop, Witteveen, Tinbergen and of recent OEEC studies. This is followed, in the second part, by a discerning discussion of the nature and functions of the principal instruments of monetary and credit policy—from orthodox discount-rate changes and gold flows of gold standard days to changes in reserve requirements, open-market operations, the setting of liquidity ratios, the imposition of direct credit controls and the other means of monetary management currently at the disposal of central banks.

The third and final part discusses the general institutional environment in which central bank policies and monetary controls are currently applied in practice. Attention is given to such factors as the expanding role of fiscal policy in the economic life of the community and the problems which its growing importance poses for monetary managers, and the lessened responsiveness of demand and supply of credit to changes in interest rates because of the emergence in the economy of new rigidities and new institutions and practices—such as finance companies supported by powerful industrial groups independently able to provide cheap consumer credit, long-term financing provided through revolving short-term credits, the growing volume of corporate savings available for investment in the enterprises within which they originate, the effects of pressures by powerful labor groups upon certain basic costs and prices, and finally current tendencies toward direct or indirect interventions and pressures by powerful political groups in the regulatory activities of monetary authorities.

Although generally no specific solutions of his own are offered by the author for the problems and difficulties which he describes, his comprehensive and scholarly review of the problems currently encountered in the field of monetary management and policy provides suggestive and stimulating reading for the student of monetary affairs. The usefulness of the monograph is enhanced by apt and frequent footnote references to the work of others and by the comprehensive bibliography appended to the volume.

WILLIAM G. WELK

Washington, D.C.

Money, Banking, and Economic Welfare. By PAUL B. TRESCOTT. New York: McGraw-Hill Book Co., 1960. Pp. xii, 578. \$7.50.

Designed for the undergraduate course in money and banking, this new text covers much the same ground as Chandler's *The Economics of Money and Banking*. The conventional material on the nature and evolution of money and on the mechanics of monetary transactions is presented in Parts I and II. A major section on monetary theory (Part III) is followed by two chapters (Part IV) on financial institutions and their role in the saving-investment process, and two chapters (Part V) on international relationships. The author's interest in history manifests itself in a major section (Part VI) recounting money and banking developments from colonial to present times. The final part is devoted to a discussion of current monetary problems and an

appraisal of means for coping with them. In general the author's style is orderly and clear.

Several specific features set this book apart from others in the field. Considerable emphasis is given to the theoretical distinction between the "main money flow" (payments for current production and services) and the "financial circulation." The relationships between the two are developed through the use of a budget equation to which each transactor must conform: income plus borrowing equals expenditure plus increased cash holdings plus increased holdings of other financial assets. Only a page (p. 115) is given, however, to a description of the institutional arrangements of the money market and the types of instruments and transactions employed by economic units wishing to adjust their liquidity positions.

The text's treatment of general equilibrium in Chapter 9 is distinctive. This synthesis is presented in the form of algebraic equations which recognize time-lags, and this enables Trescott to analyze disturbances to equilibrium as a dynamic process. Those students who are willing to make the effort required to trace through the process of period-by-period adjustment will receive, I believe, a rich reward in the form of a comprehensive understanding of the mutual dependencies which constitute an economic system. The author is to be commended, too, for a willingness to confront theoretical formulations with empirical evidence. Although users of the book may dispute some aspects of the text's interpretation of the empirical record (*e.g.*, the data relating borrowing and interest rates on page 202) this material will nevertheless be useful for classroom discussion.

The chapters on monetary history I found less valuable than other sections of the book. Here the author has laid out an intricate, detailed, chronology of currency issues, types of coinage, detailed aspects of silver legislation, and so on, covering a span of 300 years, and the sheer volume of detail has forced the author into a rather superficial treatment. Although the theoretical tools of earlier chapters are at the disposal of the reader, very little use is made of them in interpreting the historical record.

What I regard as a deficiency in both the theory and policy chapters is the inadequate treatment of the role of uncertainty. There is no recognition, for example, that a policy of permitting or inducing short-term fluctuations in the prices of government securities which are not amenable to prediction by the public, as contrasted with a policy of price stabilization, would reduce the "moneyness" of the public's holdings of these securities and hence, other factors constant, increase the demand for cash balances. Trescott's view of the significance of monetary policy is limited to its effects on factors operating on the supply side of money markets, *i.e.*, on the quantity of money, its cost, and the extent of credit rationing by lenders (p. 534).

Because much of Trescott's text is appealing, I regret having to report the presence of a fairly large number of inaccuracies. On page 188, the total demand for money is denoted by M ; later (p. 204) the symbol is switched to D_m . But the latter symbol has already been used on page 186 as meaning the transaction demand only. On page 157, "propensity to consume" would more

helpfully be stated as the marginal propensity. Here, too, the author states that "multiplier analysis implies that investment changes infrequently and stays constant for long periods despite large changes in consumption" whereas it would be fairer to say that multiplier analysis is only a partial explanation. The example showing how the marginal efficiency of capital should be calculated (p. 160) is not accurate; use of the present-value formula presented on an earlier page (p. 117) would have straightened this out.

The definition of liquid assets (p. 186) makes them out to be assets whose "money value does not fluctuate" (among other attributes) which in general is true only of money itself. And on the following page reference is made to choosing "between liquid assets and such other stores of value as . . . bonds. . . ." On page 188, bonds are put back into the category of "liquid assets." One reads on page 104 that government transfer payments "are income payments . . . for which the government receives no currently produced goods or services in exchange," a statement calculated to worry the reader about the concept of income. The drop in GNP during the 1953-54 and 1957-58 recessions I figure to be 2.7 and 3.6 per cent respectively (using quarterly data) not the "less than 1%" decline described on page 128.

I question, too, the author's emphasis that "business disposable income" (depreciation plus undistributed profits) "has generally been stable at about 10% of GNP" (p. 146) and "In the 1950's BDI consistently accounted for about 10% of GNP" (p. 110); this is likely to lead to a misapprehension by students concerning the stability of corporate profits. My calculations show that during the period 1951 to 1958 the range of maximum departure of business disposable income from the 10 per cent of GNP level, using quarterly data, was over \$6 billions.

PAUL G. DARLING

Bowdoin College

Public Finance; Fiscal Policy

Public Finance and Full Employment with Special Reference to Underdeveloped Areas. By V. V. BORKAR. University of Bombay Publications, Economic Series, No. 9. Bombay: Vora and Co., 1959. Pp. xlv, 179. Rs 12.50.

Fiscal Policy in Underdeveloped Countries, with Special Reference to India. By RAJA J. CHELLIAH. New York: Macmillan, 1960. Pp. 168. \$3.50.

In these books two economists with evidently strong humanitarian instincts use the tools of modern economic analysis to study a problem important to mankind. (Neither, however, gives any explicit attention to the query, "What do the people want?" except a brief remark by Borkar that some Indians want freedom to be lazy [p. 140].) Although the volumes have much in common, they also differ substantially. Borkar's is the more "theoretical" and makes the broader claims to generality of application. Chelliah's focuses more closely on concrete problems, while drawing on a solid foundation of theory.

Dr. Borkar, of Kanatak University, sets himself the task of extending or

adapting Keynesian analysis to the economies of underdeveloped lands. His basic argument was completed several years ago and seems less original today than it probably was when written, *e.g.*, the emphasis upon the need to coordinate monetary and fiscal policies. The references and citations suggest that heavy reliance was placed on materials we should no longer consider most advanced. The interpretations of developed economies leave something to be desired; it would be a pity if Indian students accepted as true of the United States some of the "asides" in this book, statements which are not essential to the author's argument.

Borkar defines *full employment* as "a situation in which the demand for labor matches with the supply of labor of those willing to work at a wage rate equal to their marginal productivity, not less than the cost of living. . . . *Cost of living* denotes the minimum income which it is considered desirable to ensure to all. . . . Obviously this is a flexible concept. . . . Where exactly we draw this line does not, however, affect the analysis materially." (It might affect expectations and policy, I should think.) The definition is designed to force attention to disguised unemployment in which the wage rate equal to marginal productivity is less than the cost-of-living level. We may question the use of definitions no more precise than these. Yet my own doubts, I admit, are of minor significance alongside the importance of the major theme—that investment must be stimulated, and the "right" kind of investment. The concerns which Keynes had about investment differ profoundly from those facing India.

Government has a major role to play in investment for six reasons (pp. 48-51)—largely to fill big gaps left by private investment. Fiscal and monetary policy must be directed toward stimulating total investment. For reasons developed at length (Ch. 5), Borkar concludes that in India monetary policy can be expected to accomplish little in speeding investment. Deficit spending must be used, but with caution. The discussion of the economic effects of deficit spending and of the growth of public debt in India can probably be applied to other underdeveloped lands. Except for perhaps inadequate attention to balance-of-payments problems and, to my mind, undue worry about the effects of growing debt on the distribution of wealth (what would the bond buyers have done otherwise?) this discussion is probably a real contribution. Inflation is an evil which, in Borkar's view, India must not tolerate. Heavier use of indirect taxes is recommended—and, by implication, a tax to be paid in labor.

A final chapter on fiscal policy in India since 1938 abounds with criticism. Throughout the first 142 pages of the book I often asked myself, in effect, "how can the men running the government of a poor country have the competence and integrity to do the job Borkar expects of them?" On the basis of his interpretation of the record, they have not done well, although recent policies are better than those before about 1956. I remain with the feeling that the author's fiscal-policy programs with their heavy emphasis on government investment require a quality of government—in Parliament and in the Civil Service—not likely to be found soon in underdeveloped countries. According

to the author, Indians acting through the market process do not do enough to speed growth. I wonder how much better they can be expected to do through the political process. Fortunately, they have in Borkar's study much that can help them.

Dr. Chelliah of the National Council of Applied Economic Research in New Delhi also concentrates on the need for greater capital formation. He, too, is impressed by the difficulty of applying Keynesian-type analysis to a land like India. Unemployment is chronic, largely because of the scarcity of capital and entrepreneurship. Cycles originate abroad for the most part. Consequently, deficit finance in an underdeveloped land cannot help much in creating jobs and will lead to inflation long before full employment is reached. Fiscal policy must focus on increasing investment, not because capital formation is the only thing necessary for speeding development but because it is the most important. Chelliah's interest, however, is not so much in raising collective (government) saving and investment as in expanding the *total*. The private sector, he believes, has been slighted unduly by recent Indian policy.

The role of fiscal policy should consist of "(a) increasing the rate of investment by checking actual and potential consumption; (b) encouraging the flow of investment into channels judged to be most desirable from the point of view of society; (c) in a quasi-planned economy, regulating the flow of purchasing power in accordance with the overall pattern laid down in the plan; (d) where large inequalities of income and wealth exist, modifying the distribution . . . in a manner and to the extent that are consistent with the best long-term interests of the population as a whole" (p. 52). Most of the discussion involves taxation. The general analysis of tax theory and practice seems to me excellent—resting on a broad knowledge of both Western theory and the facts of India—far-sighted and also realistic.

Taxation in India should seek to mobilize the economic surplus—not defined precisely, but income above that required for "essential consumption." The author believes that there is now enough surplus to permit nearly a doubling of investment. And the surplus will grow. The present tax system has serious defects which could be reduced by reforms which would also help mobilize the surplus. The author accepts as a datum the existence in East Asia of a powerful desire to reduce inequality, yet he is obviously less than happy about the methods now used in India. He seems to believe that this one objective should have less weight in the future than it does today for now both incentives and capital accumulation are impeded by egalitarian policies.

Agricultural incomes at present are undertaxed; unless they are taxed more effectively, an unduly large part of the growth of national income will be consumed on the farm. Personal income tax rates are too steeply progressive. (The discussion of the canon of ability to pay could be read with profit by many Americans who use the concept.) The present tax system is inequitable in that people in similar circumstances are not treated equally. The taxation of business is too heavy for an economy which needs economic expansion as badly as does India. The steeply progressive expenditures tax comes in for strong criticism; the levy reaches only about 6,000 families, is complex, and

is not necessary. Its main potential merit is that it can encourage savings. Chelliah would achieve the same goal by granting limited income tax exemptions for (new) savings (and capital gains) which are invested in forms that promise to serve the social welfare. Purchases of newly issued government bonds and newly issued shares of corporations would qualify.

Heavier use should be made of indirect taxes on mass consumption. Necessities should be exempt, but other consumption must be curbed by taxation to make resources available for investment. It is the masses, and their children, who will benefit from such forced savings. The general analysis of consumption taxes is very good indeed.

There is a role for deficit financing—but none for inflation. Within a few pages the author deals competently with these two topics. His description of the Indian revenue system and his review of developments over recent years both seem of high quality, though I am not qualified to judge them.

Both volumes reflect the efforts of professional economists to apply Anglo-Saxon economic concepts to a land vastly different from the lands where the concepts developed. Here is evidence that progressive taxation as applied in India is an obstacle to progress. The authors find Keynesian employment theory hardly the answer to India's employment problem. They implicitly reject much of our implicit theory of growth because India has too few entrepreneurs (in the private sector). On these and on other points, the authors do not always see eye to eye. Yet both see much which can help anyone who is concerned with problems of public finance in an underdeveloped land.

C. LOWELL HARRISS

University of Strasbourg
Columbia University

The Question of Government Spending: Public Needs and Private Wants. By FRANCIS M. BATOR. New York: Harper & Brothers, 1960. Pp. xvi, 167. \$3.75.

In this deceptively short book Professor Bator presents a scholarly and concise analysis of the problems involved in determining the proper allocation of resources between the public and the private sectors of the economy. By concentrating on the arguments generally used against any significant expansion in the volume of government spending, the text, which is aimed at "the persistent lay reader," undertakes to clarify the issues and to eliminate from consideration all irrelevant and incorrect propositions. The result is a lively and lucid discussion which economists will find useful for both undergraduate and graduate students. For the economists themselves there are numerous footnotes which go into the more technical aspects of the subject and which, had they been put instead into the text, would have increased the size of the book substantially.

The discussion begins, appropriately enough, with a 30-page condensation of recent quantitative fiscal history, covering the 1929-57 period. The familiar aggregate growth trends are all here, but the discussion carefully documents the extent to which they are attributable to the requirements of nation-

al defense. In 1957, for example, the ratio of nondefense government output to nondefense GNP was only 10 per cent, as compared with 12-13 per cent in 1939 and 1940 and 7.5 percent in 1929. In spite of a 50 per cent increase in real civilian output per capita between 1939 and 1957, nondefense government output per head, when converted to 1957 dollars, was the same in both years.

Two criticisms of this section may be made. The analysis throughout is based on government expenditures as shown in the national income accounts. As a result government lending and loan insurance (guaranty) programs, which have grown substantially since 1929, are omitted from consideration. In addition, some questionable comparisons are made between government transfer payments and national income, which is viewed as the sum total of incomes in the economy. From this point of view national income is objectionable because it measures private incomes before some taxes (corporate and personal income levies) but after the deduction of others (indirect business taxes). Since there is no logical support for this distinction, some other base of comparison, such as net national product, should have been used.

Having raised in Part I the possibility that government nondefense output has been neglected, and having pointed out in Chapter 5 that there is no glaring evidence that private shares have been skimmed, Bator devotes the rest of the book to an analysis of the issues involved in the choice between public and private spending.

Chapter 4 examines and rejects the argument that more government spending can be obtained only by sacrificing the goal of price stability. The crucial question here is whether higher taxes will so impair work incentives that supply will contract by as much as private demand so that no resources are released for government use. To this question a twofold answer is given: (1) available empirical evidence does not indicate strong disincentive reactions to high tax rates; and (2) even if this evidence is rejected, there will surely be few taxpayers who will accept the substantial reduction in disposable income which would result from their deciding to meet the burden of higher taxes by cutting their supply of effort by as much as their demand for private output.

Chapter 6 presents the positive case for government output, based on the familiar proposition that there are certain goods and services which the private sector cannot provide and others which it will provide only in inadequate amounts (because average cost exceeds marginal cost at output levels justified by demand). In opposition, as the author notes in Chapter 7, it may be argued that governments use resources more wastefully and respond less well to changes in consumer tastes than do private markets. His reply is that even if this contention is accepted (whether or not it should be is unfortunately not considered) much government output will still be economically justified. Although government inefficiency increases the alternative opportunity costs of public programs, in other words, it need not cause their rejection unless, under ideal conditions of government operation, they would have been close to the acceptance-rejection margin.

In judging the desirability of new government projects, one should include on the negative side the real costs, if any, of the additional taxes necessitated by the programs. On this score Bator accepts uncritically the proposition that all taxes, other than lump-sum levies, distort the composition of private output, even though a number of writers, including this reviewer, have argued that excise taxes, for example, may improve, as well as worsen, resource allocation.

As a result of his examination of these and other issues, Bator concludes that what is most needed in public affairs is more widespread and better information about the economic benefits and costs of public programs, and more experimentation, based on a logical and imaginative analysis of specific cases, in place of rigid application of so-called universal rules. The significance of the book, however, lies not in these conclusions but rather in the clarification achieved as a result of a careful analysis of the various approaches, both naive and sophisticated, taken to the question of government spending.

GEORGE F. BREAK

University of California, Berkeley

International Economics

Gold and the Dollar Crisis. By ROBERT TRIFFIN. New Haven: Yale University Press, 1960. Pp. xiii, 195. \$4.75.

Professor Triffin's latest book is a logical and timely extension of the analysis of his earlier work, *Europe and the Money Muddle* (1957). That study ended with a detailed consideration of the prospective return to convertibility, urged reliance upon strengthening regional arrangements to ease the transition and sketched suggestions for a radical reform of the International Monetary Fund. The present volume—which is a convenient assemblage of already published material—starts with the return of Western European nations to convertibility at the end of 1958, diagnoses the dangers present in an international reserve system in which national currencies play a dominant role, and develops at greater length the author's earlier proposal for a reconstitution of the IMF, complemented by augmented regional arrangements.

The technical analysis of the main part of the book, which follows a brief and lucid though simplified summary of its argument, begins with a skillful exposition of the often overlooked change in the meaning of convertibility since the happy days of the automatic gold standard. Instead of convertibility into gold, with the consequent stress on central bank liquidity, convertibility now means the right to convert one currency into other currencies, often at fluctuating rather than fixed rates of exchange. With this change in the nature of convertibility, the role of reserves is no longer primarily to maintain the convertibility of a nation's currency into gold, but to meet external deficits. Thus the test of reserve adequacy is now related, not to the liquidity of central banks, but to expected fluctuations in the balance of payments. As a convenient test of reserve adequacy, Triffin takes the ratio of gross reserves to

annual imports. On the basis of data assembled by the Fund, he finds that in 1957, the *average* level of gold and foreign exchange reserves was 35 per cent for all countries other than the United States and the United Kingdom. But the record since 1950 shows a strong likelihood of resort to severe exchange controls when the level drops below 30 per cent. Since an average of 35 per cent would naturally include some below that figure, Triffin concludes that the 1957 level was on the low side, since any decline would tend to force certain key countries to abandon convertibility at stable rates and resort to exchange instability and restrictions.

The Fund estimates that trade will expand and required reserves will grow in coming years at approximately 3 per cent per annum. Prospective increases in the gold supply would cover some 70 per cent of the additional reserves needed. Triffin is less optimistic, anticipating a growth of 4 per cent (or more); additional gold supplies would then provide only 48 per cent of required reserves. The balance would have to consist of additional holdings of the currencies of the two center countries, the United States and the United Kingdom.

This prospective increase—alongside its already large preponderance—in the role of foreign exchange, and especially of dollars, in buttressing world liquidity, is what Triffin finds profoundly disquieting. Already at the end of 1958, U.S. gold holdings exceeded short-term liabilities to foreigners by only \$5 billion. (Since then, with continued gold losses and rising foreign claims, the excess has disappeared.)

These huge claims against our gold reserves threaten the liquidity of the dollar and therewith of a large part of other countries' international reserves. They also restrict our freedom to use monetary policy to stimulate our own economic growth or to relieve unemployment. A substantial further increase in foreign dollar holdings would only make matters worse. Yet if provision is not made for increasing the reserves of the world, its rate of growth and expansion will inevitably be slowed.

The solution, according to Triffin, is not revaluation of gold, because the increase in its price would have to be steep and repeated, its benefits would be haphazard and inequitable, and to stimulate additional gold mining is a silly business. Nor do fluctuating exchange rates offer a general solution. The danger of destabilizing speculation is great, and the record of freely moving rates, as in the 1920's, is poor. Although moderate rate variations, accompanied by sensible monetary and fiscal policies, meet with qualified approval, Triffin points out that the need for more adequate reserve levels would remain. Without adequate reserves, nations experiencing balance-of-payments difficulties will be forced to resort excessively to exchange depreciation or quantitative restrictions, with consequent damage to the international payments mechanism.

Triffin's solution is to convert the IMF into a sort of world central bank. Deposits with the Fund (as with the earlier Keynes plan) would provide *international* exchange that would displace the present growing and destabilizing national currency component of international reserves. These deposits

would be made equivalent to gold and fully acceptable in world payments. The initial deposits would be established by the transfer to the Fund of present Fund balances held by members, of foreign exchange (dollar and sterling) holdings, and of gold. To ensure adequate Fund resources, Triffin would fix such initial deposits at 20 per cent of members' gross reserves and of subsequent additions thereto. Dollar and sterling holdings thus acquired the Fund could liquidate gradually, converting them into gold or deposits with the Fund itself.

Like a central bank, the Fund would be able to lend the idle reserves of surplus countries to those in need of them, or to engage in open-market operations on its own initiative in the financial markets of member countries. To avoid the inflationary bias of Keynes' proposed Clearing Union, the reconstituted Fund would be permitted to expand total international credit by its lending operations only by an agreed amount, corresponding as closely as possible to the rate of expansion of world trade.

I find Triffin's analysis cogent and compelling. The spread of the fractional reserve system in the 19th century permitted economic growth to exceed the rate of expansion of gold supplies, but also established the need for national central banks, whose deposits could serve as the reserves of commercial banks. Now, with required international reserves exceeding present or potential gold supplies, there is need for a parallel internationalization of the nongold component of these reserves. Triffin recognizes the difficulties of reaching agreement on the required institutional arrangements, and relies on an extension of regional facilities and the recent increase in Fund resources to buy time. But there is no room for complacency, and this volume should help to dispel it.

As an alternative to Triffin's internationalized gold-exchange standard, some would prefer a system of fluctuating exchange rates, moderated by official support. Though the experience of the 1920's was unhappy, some recent examples are more encouraging. A good deal has been learned in the last thirty years; the need for relative exchange stability, and the relation between a country's monetary and fiscal policy and its balance of payments, are now widely appreciated. And though such a system would not dispense with the need for international reserves, it would reduce the amounts required, since exchange-rate fluctuations would substitute for reserve movements in the process of adjustment.

To obtain agreement on the establishment of a flexible exchange-rate system, however, would undoubtedly be more difficult than to reach accord on Triffin's proposals. The latter, though drastic, are but an extension of principles and practices with which bankers and economists are already familiar. There is good reason to believe they would work. Therefore they merit wide support. Should they fail of realization, a flexible exchange-rate system would become the most practicable alternative to a return to bilateralism and restrictionism.

P. T. ELLSWORTH

University of Wisconsin

Die Europäische Wirtschaftsgemeinschaft und die Drittländer. By PAUL ERDMAN and PETER ROGGE. Basel: Kyklos; Tübingen: J. C. B. Mohr (Paul Siebeck), 1960. Pp. xii, 337. DM 28.00.

Volume 19 of the List Gesellschaft publication series returns to the topic of economic integration in Europe which was also the subject of Volumes 8 and 9. This third study is chiefly concerned with the probable effects of the establishment of the European Economic Community (EEC) on the pattern and volume of trade of the rest of the world. At a time when the tariff structure of the Common Market is the subject of deliberations among the members of the GATT, and when the eventual configuration of Europe's commercial relations depends on the outcome of the negotiations between the EEC and the European Free Trade Area, this study contributes important reference material to the discussion, especially by presenting estimates of the Common Market's import requirements from third countries over the next 10 to 15 years. Throughout the study strong emphasis is placed on the effect of demand growth within the integrated area as an offset to the price effect of the internal tariff reductions which, taken by itself, will be unfavorable to suppliers outside the Common Market.

The authors approach the subject with a theoretical chapter reviewing Scitovsky's measures of the welfare gains and losses arising from trade creation and trade diversion and analyzing the sources from which integration-induced increases in the rate of economic growth may be expected to flow. The authors agree with Harry G. Johnson that one should not anticipate much gain from increased mass production possibilities, but they expect a substantial income effect through increased investment in plant modernization, improved mobility of labor, capital, and intermediate products, and greater uniformity in the pursuit of full employment policies. Part I is completed by a survey of the effects on outsiders of the regional arrangements of the OEEC, the European Coal and Steel Community, and Benelux.

Following a discussion of the provisions of the Treaty of Rome and a survey of the present resources, production, and trade of the EEC area and of its expected economic growth, the study analyzes the prospects for exporters to the Common Market by economic sectors, by individual commodity groups, and by selected countries. It is understandable that detailed forecasts can be made only in the cases of agricultural products, raw materials, and fuels, and only for countries supplying these commodities (the country studies cover Greece, Ghana, Brazil, Nicaragua, Cuba, Pakistan, and Ceylon), while the future of trade in industrial products is much less predictable.

The authors conclude that, in view of the special provisions for agriculture in the EEC treaty, external suppliers of temperate-zone food products must expect a decline, and perhaps a complete elimination, of their sales to the integrated area, while wood, fiber, and tobacco suppliers can be more optimistic. The prospects for exporters of tropical foods are less unfavorable than those of suppliers of temperate-zone foods, although the tariff preference enjoyed by the EEC overseas territories is expected to result, in the case of these

products, in an appreciable trade diversion to the detriment of outsiders. Whereas EEC net imports in these two categories will decline over the next two decades, imports of nonagricultural raw materials and fuels, whose supply elasticities in the EEC and in the associated territories are low, will tend to rise sharply. In the area of manufactured products it is conjectured that external suppliers of consumer goods may find themselves in a less favorable position than those of capital goods.

One can hardly blame the authors for doing less than full justice to the price aspects of their investigation. The possible price developments emanating from the tariff changes and from the implied demand and supply shifts are reviewed in the theoretical chapter, but they play a subordinate role in the forecasts. It is however clear that terms-of-trade effects may qualify the conclusions reached, particularly in the case of the primary producing areas covered in the country studies.

One other point may be observed: The study rightly emphasizes the income effect of integration on imports from the rest of the world which tends to weaken or even to reverse the price effect of the tariff preference. But estimates of this income effect, as contrasted with the income effect of economic growth in the absence of integration, are not explicitly presented, although the authors allow for the integration effect in their over-all growth-rate forecast. To be sure, suppliers will be more interested in the expected change in their sales volume than in the attribution of this change to various factors. But such an attribution is necessary for a full evaluation of the effects of integration. Adding the effect of demand growth without integration to the income effect of the integration itself tends to make a regional preference system appear relatively painless for the outside world. These comments are not meant to detract from the high quality and the painstaking scholarship which make this study a useful contribution to the discussion of economic integration.

RUDOLF R. RHOMBERG

*International Monetary Fund**

*The opinions expressed in this review are not necessarily those of the International Monetary Fund.

Trayectoria del mercado común latinoamericano. By VICTOR L. URQUIDI. Mexico: Centro de Estudios Monetarios Latinoamericanos, 1960. Pp. 178.

This is a well-organized, intelligently written commentary on the effort which led to the Intergovernmental Conference for the establishment of a Latin American Free Trade Area held in Montevideo, Uruguay in September 1959, and again in February 1960, out of which came the treaty creating a free-trade zone among Latin American countries and the Latin American Free Trade Association.

To be sure, not all the nations in Central and South America were represented at the conferences and eventually the Montevideo Treaty was signed by only seven of them—Argentina, Brazil, Chile, Mexico, Paraguay, Peru and

Uruguay—but inevitably other nations are bound to be attracted as the experiment develops. The United States was represented by an observer; and there was also a delegation from the International Monetary Fund.

The trade pattern of the seven signatory countries is quite different from the trade pattern of the Western European nations, the ones which were responsible for the creation of the Euromart compact. Because of this, the two efforts are only superficially analogous. To begin with, while the total foreign trade of the seven Latin American countries amounts to approximately \$3.5 billion per annum (average of the last four years), trade among themselves has averaged only 10-12 per cent of that total (\$350 to \$400 millions). In the second place, about 70 per cent of this intratrade consists of Argentine and Brazilian exports. Furthermore, some 75 per cent of this trade is composed of primary, nonmanufactured products such as wheat, fresh fruits, coffee, edible oils, cocoa, yerba mate, petroleum, copper and timber. Finally, this small volume of trade among the countries of the area is not in balance. Peru and Paraguay have typically shown net surpluses, while Argentina, Chile and Uruguay constantly reveal net deficits in their trade accounts.

There has been considerable progress in recent years in the area toward currency convertibility and the elimination of payment restrictions. The larger part of the foreign transactions of the seven countries is now handled through free-exchange markets with uniform and fluctuating rates, but still 70 per cent of the intratrade of the area is bound by bilateral payments arrangements. Import licensing has ceased, but Chile, Paraguay and Peru still require advance import deposits for most of their imported articles. Nevertheless, full economic rehabilitation of the countries concerned has not been completed. Their foreign exchange reserves are still insufficient and large short-term indebtedness remains to be liquidated.

The author discusses such problems as the industrial growth that the members of the free-trade area could experience as a result of the treaty; the laborious course they had to follow in order to bring their negotiations to fruition—but perhaps the most important point raised is that of the imbalance of trade among the nations of the free-trade area. This will create net area creditors and net area debtors thus emphasizing the necessity for proper financing of the enlarged surpluses and deficits which will result. All this is further complicated by the pressure of two factors: (1) that not all the nations of the area have fully convertible currencies; (2) that, due to the small volume of intratrade, some distinction should be made between trade within the area and trade outside of it.

Inevitably, two finance plans were bound to emerge. One of these plans called for the financing of trade-area deficits by outside trade surpluses. The other plan envisaged the establishment of a special area-wide payment settlements system. This second plan would make three things imperative: (a) the use of dollars (agreement dollars) as a common payments medium within the area; (b) the creation of a special clearing agency to regulate and facilitate payments; (c) the supplying of the agency with a dollar capital of its own. Peru has been the champion of the first plan, Chile of the second. Where the

dollars would come from for the proposed clearing agency is, of course, no secret to anyone.

CARLO MARIA FLUMIANI

Boston College

Introduction to the World Economy. By ARTHUR J. BROWN. New York: Rinehart & Co., 1959. Pp. 212. \$3.50.

In the preface, the author writes: "The aim of this book is to introduce readers to some of the salient features and problems of the world economy and to give them some indication of the main ways in which economists set about the task of analysing them." He then, in a fashion characteristic of English writers, proceeds to cover much ground in brief compass with an informative and theoretically sound argument.

He begins with the basic elements of the economic process, including a non-technical (e.g., with no graphs or tables and few footnotes) commentary on the roles of production, consumption, investment, and saving in relation to economic activity. Then follows a concise analysis of the principles relating to pricing and distribution, a survey of the problems associated with economic growth, and finally an outline of the basic pattern of international trade. The book is policy-oriented with considerable use of factual data and an emphasis on important international, with their correlated domestic, economic problems.

This reviewer has used the text as an introductory frame of reference (followed by a more standard treatment) in an undergraduate course in international trade with good results. It contains numerous leads for further study and investigation if the reader desires to pursue certain topics with greater emphasis. For the instructor with broad interests in the international economy, the book will serve as an excellent base for outside readings with the possibility of extension in many directions. As another possibility, it would seemingly serve quite well as a one-semester introduction to economics if the subject matter was supplemented with additional readings and explanatory lectures.

This interesting and well-presented little volume by a broad-gauge economist presents the type of knowledge that is of greatest value to the policy maker. In addition, it serves admirably as a means for consolidating the thinking and filling the ever-present gaps in the knowledge of economics students. The generalizations are broad but penetrating, and must be considered with due reflection or the reader will be misled by what appears at first blush to be "easy" reading. In fact, extensive study underlies the substantive content, and the sophisticated reader should have a rewarding experience.

J. D. DEFOREST

Denison University

International Economics. By H. B. KILLOUGH and L. W. KILLOUGH. Princeton: Van Nostrand, 1960. Pp. x, 435. \$6.50.

This work, the second in the Series in Business Administration and Economics edited by John R. Beishline, emphasizes the policy aspects of international economic relations. It employs considerable historical detail to illus-

trate the few principles of international economics with which it deals. The main contemporary policy issues on which it elaborates include international institutional problems, programs for underdeveloped countries, European economic integration and Russian economic competition.

The arrangement of the book is logical, although the systematic insight characterizing the detailed discussion is somewhat impaired by irrelevant digressions. After an introductory section in which the nature of international trade is related to general notions of international economic policy, the authors tackle the theory of comparative advantage. This part of a text on international economics is perhaps the most significant test of its worth as a pedagogical instrument. If the student does not perceive the fundamental ideas of international comparative advantage and if he then remains confused over the international payments mechanism all that follows in the subject is likely to be elusive, misunderstood and evocative of unsound policy attitudes. The authors in this case follow up their analysis of comparative advantage with a section on international payments and payments-balancing operations, a subject which provides the second main test of a book of this kind. Included in this part also is a relatively short chapter on tariffs and other controls on trade. The fourth part in the book deals with postwar stabilization and development. It describes the principal international institutions such as the International Monetary Fund, International Bank for Reconstruction and Development and General Agreement on Tariffs and Trade, the attempts at building economic development in countries where little has yet occurred, the commodity stabilization schemes, and economic union in Europe. The final part examines the economic challenge to the West provided by Russian competition internationally. Having covered the components of world economic strategy, the authors turn to suggestions for future U. S. economic policy. The classified bibliography is systematic and useful.

The theory of comparative advantage is presented in an historical context. The authors employ interesting examples derived from labor productivity studies of the United Nations, International Labour Office, and Organisation for European Economic Co-operation and illustrate the factor-intensities problem with rather confusing empirical material. In their development of the theory of international trade the authors inject some very elementary discussions of the theory of the firm under competitive and noncompetitive conditions, but omit adequate development of the demand side of the theory. Their treatment therefore is mostly concerned with the production side of international economics; they thoroughly explore the reasons why high-wage high-labor productivity countries can trade with their opposites without harming living standards.

The international payments-balancing mechanism is also explained in a context of historical events. No judgment is made on the alternative exchange rate systems, but they display much confidence in the purchasing-power parity theory of exchange rates. The accounting aspects of the balance of payments, the banking and monetary connections, the role of various types of capital movements receive very little attention.

In an oddly developed argument, the Killough team feels that the ends as seen by the classical writers are suitable for the present, claiming that the principles of free-enterprise economics harmonize with goals of collective security. To realize these goals more fully, they suggest that Western economic policy should be directed towards freer international trade, more extensive, more continuous and more consistent aid to underdeveloped countries, and towards a greater recognition of national economic planning in cases in which it promotes freer trade. They argue strongly against any tendencies of the United States to retreat from advances already made on the road away from isolationism.

No direct suggestion is made by the authors as to where their book should fit in an economics curriculum. Their attempt to make detailed explanations of the most elementary economic concepts suggests that this book would suit beginning economics students. Certainly the institutional and policy discussions as well as the generous employment of historical example are very informative, although some of these tend to be too detailed and too remote to be of great value at the elementary level. The book is devoid of algebraic and graphical presentations so common even in elementary economics texts; the mathematically oriented reader will search in vain for exercises challenging his capacities. There seems to be a positive design to avoid theoretical generalities and to discount theoretical contributions useful in understanding international economics. Instead they resort to very specific examples which are well constructed in their own right.

For a study of purely international economics, the analysis evades adequate consideration of international investment, money and credit aspects of trade, international movement of factors, effects of tariffs and the distribution of the gains from trade. The authors, constantly decrying the lack of and deriding the accuracy of national-income statistics, remain very suspicious of the national-income approach to the maintenance of economic stability either nationally or internationally.

As might be expected from teamship, styles of writing within the joint product differ. This however cannot account completely for several cases of stilted, imprecise and laboriously repetitious passages. Aside from this fault, the work on the whole offers a rather refreshing and competitive approach to the general subject of international economics, although there is a good case for differentiating its title from the many others with identical designations which have appeared in the past decade.

KENNETH J. ROTHWELL

Bucknell University

**Business Organization; Managerial Economics;
Marketing; Accounting**

Marginal Aspects of Management Practices. By FREDERIC N. FIRESTONE.
East Lansing: Michigan State University, 1960. Pp. xii, 80.

This short book, an adaptation of a doctoral dissertation, is the most recent of a series of studies initiated by James S. Earley to test the significance of

the "marginalist approach" to the theory of the firm.¹ The author concludes, on the basis of responses to two questionnaires sent to approximately 100 "excellently managed" companies, that (1) firms using market analysis extensively in decision-making respond with generally "marginalist attitudes" to questions regarding pricing, marketing and new product policies; (2) the extent to which the selling function is represented in decision-making is significantly correlated with marginalist attitudes; and (3) the extensive use of modern budgeting techniques involving frequent revision is suggestive of a marginalist approach.

These conclusions are based upon statistical correlations for which "the significance of a chi-square test is at the 5 percent level or better." By combining answers to different questions, the author has created various indexes, such as an "index of market analysis," a "full costing index," a "market awareness" index, a "new product index," and a "quality of budgeting" index. These and others are correlated with each other and with responses to particular questions.

The care with which the statistical manipulations have been carried out is impressive, but this reviewer wonders whether such care is warranted given the probable interdependence of the responses. For example, if the respondents were at all concerned with the internal consistency of their answers despite actual procedures, much of the apparent correlation among these answers would be spurious; further, while many of the correlations relate responses in one questionnaire to responses in another, the responses come from the same set of companies; finally, some of the indexes constructed contain common questions.

Some interesting results do not depend on these correlations. Apparently these "excellently managed" companies do not rely heavily on cost-plus pricing. Sixty-one per cent of the respondents regard market analysis as more important than accounting or engineering analysis in decisions involving price changes; 62 per cent regard market analysis as most important in the pricing of new products; and 77 per cent agree that it is most important in fixing product prices in different areas.

Data on the participation of sales personnel in the making of various kinds of decisions is also illuminating. Sales representatives participate in decisions on product pricing in 100 per cent of the reporting firms; 99 per cent of these firms use sales people in making decisions on the introduction of new products; sales participation in decisions on research programs is utilized by 87 per cent of the firms; and in making decisions on changing production methods 71 per cent of the firms include sales personnel. Against this background, it is surprising, however, that only 44 per cent of these "excellently managed" companies involve sales representatives in making investment decisions. In this area the major burden falls on accounting and finance personnel.

Unfortunately the study never makes fully clear just what it is that is being

¹ Other published studies include James S. Earley, "Recent Developments in Cost Accounting and the 'Marginal Analysis,'" *Journal of Political Economy*, LXIII (June, 1955), pp. 227-242 and his "Marginal Policies of 'Excellently Managed' Companies," *American Economic Review*, XLVI (March, 1956), pp. 44-70.

tested. "Marginalist attitudes" are frequently referred to but never adequately defined, and the word "marginalist" appears as often in quotes as not. Whatever the intent, the study does reveal that "excellently managed" firms are aware of variables which affect profit and consider data on them in making decisions. The more ambitious questions, "Do these firms attempt to maximize?" and "Do they employ marginalist calculations in the attempt?" cannot be settled on the evidence offered here.

EDGAR O. EDWARDS

Rice University

Ekonomika sovetskoi trgovli. Uchebnoe posobie. (The Economics of Soviet Trade. A Textbook.) Edited by S. V. SEREBRYAKOV. Moscow: Gospolitizdat, 1959. Pp. 479. Rbl. 9.

The dozen staff-members of the Plekhanov Economic Institute in Moscow who have contributed as many chapters to this work have produced less the textbook on the economics of trade which the title page promises than a symposium on Soviet internal-trade arrangements. All but the first chapter are essentially descriptions of management techniques rather than exercises in economics; and Professor Lifits disappoints readers of his previous writings in the opening contribution entitled "Soviet Trade and Its Role in the System of the U.S.S.R. National Economy," intended to provide the theoretical setting. The preparation of an index could, moreover, not only have enhanced the claim to be a textbook but might have moved the editor to reduce the tedious repetition and overlap between chapters.

The description of planning procedures in this sector is probably the most interesting feature of the book and is chiefly to be found in Fefilov's chapter on plan methods and Genkina's on retailing. The key figure is Gosplan's estimate of household incomes, which define the retail turnover needed to clear the market (over 80 per cent of the State Bank's cash receipts derive from retail sales, and no salaries are paid by check). Since output balances for consumers' goods—whence, by deduction of supplies to organizations, are derived retail availabilities—are drawn up, in physical and then value terms, only for a restricted number of important commodities, there seems to be some element of estimation in compiling planned retail sales. The process of bringing sales and purchasing power into the desired equilibrium is not precisely described either in these chapters or in Kulikov's on price formation, although there is an interesting prospect of iteration in the practice of planning wages of retail staffs as a percentage of trade turnover.

The book's main emphasis is on the disaggregation of these global balances down to the level of the shop or restaurant. In this the contributors take especial care to define every term used, and thereby enlighten users of Soviet trade journals (e.g., in defining "transit sales"—direct sales from factory to shop), and statistics (e.g., "nonmarket funds"—sales of nonfoodstuffs to institutions—or in stating retail turnover to cover sales of standing timber in state forests).

They also put forward much good advice to trade organizations, ranging from the economics of self-service in supermarkets and cafeterias to the size

of deliveries (women form 72 per cent of trade workers and are not permitted to lift loads exceeding 20 kg., but deliveries by wholesalers are often in 100 kg. sacks or 200 kg. bales) and a wealth of facts not elsewhere readily available (e.g., that income in kind is 5 to 6 per cent for a nonfarm worker against one-third for a collective farmer; on the postwar rise, now past its peak, in street vendors as a proportion of total retail employees; on the smallness of regional wage-spreads—16 per cent maximum—and of trading margins—a maximum of 3 per cent in wholesaling and an average of $6\frac{1}{2}$ per cent in retailing). However only Gogol, on manpower and wages, Smotrina, on overheads, and Kuzin, on accounting, illustrate their narratives with factual statistics, mostly 1957 and 1958 data; the others use notional examples, of which an improbable, if trivial, case is that showing, for restaurant input-planning, as much meat (76 gr.) in potato soup as in *borsch*.

There are some criticisms of the retailing system of the present or the recent past, but most of them no more than echo recent party and government resolutions; e.g., Dneprovsky on low agricultural prices, Vasilev on shortcomings in the catering services, and others on the overcentralization of trade planning and pricing.

At two points, however, the criticisms appear original. Kistanov attacks the dispersion and overlapping of trading agencies, despite the mergers and concentration of authority in Union-Republic Ministries of Trade since 1957 (it may be computed from figures in the book that nearly one-third of 1958 turnover took place in "closed" shops, mostly run by *sovnarkhozy* in their factories, but some by GUTMO—the Soviet army PX). Kulikov finds irrationalities in price zoning and—following earlier criticisms in the press—disapproves of the 7 per cent surcharge on rural sales (saying that it leads to peasants wasting time in journeying to urban shops and to "speculation") but Smotrina defends it because rural stock and transport charges are higher.

While the Western reader may disagree with most, if not all, the assertions about capitalist trade, he will be most surprised by the absence of any but the simplest statistical techniques both in the analysis and in the reported practice of Soviet trade planners. The most that Genkina can say about inventories is that they are a positive function of turnover (in fact the behavior of Soviet trade stocks would repay study, for—far from expanding, say, in proportion to the square root of the turnover increment—they have risen *faster* than turnover).

Serebryakov mentions that wholesalers are responsible for quality control but does not describe sampling methods. Pirogov on fixed assets spends much time defining the notional capacity of soup cauldrons but almost nothing on capital efficiency. Despite the immense hauls for some consumer goods (averages of 2,000 and 1,350 km. are cited for canned goods and cigarettes), the only "programming technique" described by Serebryakov to choose supply and outlet points is visual inspection of a "chessboard tabulation" of those points. In numerical examples the elasticity of demand with respect to price is everywhere assumed to be infinite and the beginning of more refined Soviet work on consumer demand (notably on income elasticities) is ignored. Moreover the alternative set of demand signals—stock fluctuations and counter

assistants' records of customers' unfulfilled enquiries—often stressed by other Eastern European trade economists, is also scantily treated.

M. C. KASER

St. Antony's College, Oxford

Critique économique du prix de revient industriel. By JEAN-PIERRE DE BODT. Louvain and Paris: Nauwelaerts, 1959. Pp. xiv, 178.

The *Critique* is a straightforward, if pedestrian, attempt to show that conventional cost accounting techniques (on the Continent, at least) stand in need of marginal analysis. The author is a Belgian business executive as well as teacher of theory at L'Institut Supérieur de Commerce St. Ignace at Antwerp. His purpose is to provide management with more precise and rational criteria with which to pursue its goal of profit maximization, and the result is largely indebted (with acknowledgement) to the presentations of Dean and Earley in the United States. The work therefore offers little to U.S. economists and those active in U.S. management who are interested in the application of marginalist concepts to corporate direction. Apparently marginal cost accounting is not widespread in Belgium.

The level of treatment is commendably simple, but the content scarcely surpasses that of a good undergraduate microtheory course in a school of business administration. In the third and final chapter there is a case of actual application of marginal analysis in a Belgian textile concern, which shows admirably the relevance to such questions as the introduction of new lines, the dropping of old products and the control of costs of various plant divisions.

The author is well aware of the pragmatic difficulties in obtaining precise marginal costs and recognizes that the cost accountants' figures are typically "average marginal costs." He stresses the need to distinguish carefully between general fixed costs and those portions of fixed costs which can be precisely attributed to separate divisions or products.

There is clear recognition too that the essential problems of the management of the firm cannot be met simply with given technique of cost accounting, that such tools must be used with care and flexibility and that there is no substitute for business acumen. The book should be a good introduction to the subject for European management, which generally has somewhat less university and economics training than is the case here. It should be noted however that the application of marginal accounting in the United States is by no means widespread nor is it necessarily sure to prevail.

J. H. DALTON

University of Maryland

Industrial Organization; Government and Business; Industry Studies

Concentration in British Industry. By RICHARD EVELY and I. M. D. LITTLE. New York: Cambridge University Press, 1960. Pp. xvi, 357. \$10.00.

This National Institute of Economic and Social Research study includes

analyses of British concentration statistics for 1951 and of changes in concentration from 1935 to 1951; and a review, based chiefly on published sources, of developments in 20 industries since 1935. The statistical source is the Census of Production, from which the Board of Trade made available the 1951 totals for establishments, gross and net output, and employment of the three leading "units" (companies or company groups) in each trade.¹ The 1935 data are those presented by H. Leak and A. Maizels in "The Structure of British Industry," *Journal of the Royal Statistical Society*, 1945, Vol. 108, parts 1-2, pp. 142-207.

In 50 trades, the 3 largest units accounted for 67-100 per cent of either employment or net output in 1951; in 69, they accounted for 34-66 per cent; in 101, for 33 per cent or less. These high-, medium- and low-concentration groups employed 10, 24 and 66 per cent, respectively, of the total labor force. Manufacturing concentration in the United States, based on value of shipments in place of employment and a 4-company instead of a 3-company concentration ratio, shows a similar distribution.² It has been previously found that 4-company concentration is higher for most industries in Canada than in the United States [2, p. 76].

Another classification employed by Evelyn and Little may be condensed as follows: 84 trades contained big concerns, many of which "dominated" their trades or were price leaders; in 61, the firms were about equal in size, but so few in number that the situation was "favorable for collusion" (p. 10); and the conditions in 74 were "probably close to those of perfect competition provided that there is no collective regulation"—a significant qualification (p. 11).

Among the findings on plant size is the more frequent association of concentration with relative plant size than with relative number of plants in a unit, although technology appears to bar small plants in only 26 trades. As to why "there has been a marked tendency for high concentration, once attained, to persist" (p. 130), the report points out that newcomers shun a trade which is contracting, while various factors related to economies of size (and sometimes private or government restrictions) hamper entry into some expanding trades.

One problem in handling the material is that "a considerable part of the variations in concentration is inexplicable in terms of measurable economic facts" (p. 21). Different trades do not respond in the same way to similar forces. Another problem is the limited significance of some statistical measures. Thus the -0.83 correlation of concentration ratios and number of units (introduced with a misprint, "lower" for "higher," p. 14) "is hardly surprising," since "low concentration cannot occur with few units" (p. 105). The

¹ For 23 trades the Board of Trade, applying the more cautious U.S. Census Bureau policy on company disclosure, used 4-company totals; for 13 trades it used 5 or more.

² The 62 4-digit industries with 67-100 per cent concentration in 1954 accounted for 11 per cent of value of shipments; the 171 with 34-66 per cent, for 26 per cent; and the 201 with 33 per cent or less, for 63 per cent (computed from [1, pp. 23, 243-65]). Comparability would require that certain large nonmanufacturing trades such as laundry work and construction, included in the British totals (and whose local-market character blurs the meaning of the national concentration statistics), be added to the low-concentration bracket in the United States.

.84 correlation of concentration ratios and size ratios (average employment of the three largest units divided by average employment of all units) is still less surprising. The negative correlation ($-.40$) between number of units and size ratios, is hard to interpret—and, in fact, when size ratios are defined in terms of *other* instead of *all* units, it becomes a weak positive (.16).

No over-all measure of concentration change from 1935 to 1951 is given, but a median of 31 in 1935 and of 37 in 1951 can be derived from the gross output concentration ratios of 185 trades (Appendix J). With their usual caution, the authors isolate only 27 trades where "principal product concentration" clearly increased, and 14 where it decreased. From the chapter reviewing the growth of concentration in 14 of the 27 trades, the reader may infer that 6 (cans, lead, oil refining, razors, soap, watches and clocks) increased their concentration as a result of commercial, financial and technological advantages of size, with acquisitions playing a very minor role. Coal nationalization was largely responsible for increased concentration in 2 trades often operated by coal companies (bricks, coke ovens); and government-encouraged amalgamation and quotas were controlling in another (sugar). In 5 trades (baking, film, metal mining, tinplate, wrought iron and steel tubes) acquisitions, to achieve self-sufficiency and to take advantage of modern large-scale technology, were important. Concentration, in brief, resulted from technology, mergers and government action.

The report is packed with data of varying degrees of importance, but all of it worth gathering so that no clue to the understanding of British concentration will be missed. Its value to most of those consulting it will be in the historical review and the newly published figures for individual trades. Only a very few specialists can undertake the long, hard labor of reviewing the statistical analysis. Students will regret that such a masterly analysis of complex material should have to wait until nine years after the period represented by the data.

SIMON N. WHITNEY

Federal Trade Commission

REFERENCES

1. *Concentration in American Industry*, Report of the Subcommittee on Anti-trust and Monopoly, Senate Committee on the Judiciary, 85th Cong., 1st sess., 1957.
2. Gideon Rosenbluth, *Concentration in Canadian Manufacturing Industries*, Nat. Bur. Econ. Research, Gen. Ser., No. 61, Princeton 1957.

Proceedings, International Conference on Control of Restrictive Business Practices. Glencoe, Ill.: The Free Press, for the Graduate School of Business, University of Chicago, 1960. Pp. xix, 380. \$10.00.

The international conference on control of restrictive business practices was convened in Chicago in mid-January 1958 under the auspices of the Graduate School of Business, University of Chicago with financial support from the Ford Foundation. In attendance were 64 government officials and private persons, all in an individual rather than an official capacity, from 16

countries. What are best characterized as the minutes of the meetings are contained in the volume under review.

The book itself is divided into four parts: (a) public lectures describing the law with respect to restrictive agreements and the procedures by which the law is enforced in the United Kingdom, the Netherlands, Norway and West Germany, (b) prepared statements on national policy towards such arrangements in Austria, Belgium, Canada, Denmark, France, Ireland, Japan and Sweden, (c) summaries of discussions at closed sessions among and between the participating governmental and private groups, and (d) texts of major legislative enactments concerning restrictive practices in various nations since 1954.

To summarize a document of this kind in a few well-chosen statements is a demanding, perhaps impossible, task. The discussants touched on a great many specific issues, they tended to stress the differences rather than the similarities in their points of view, and—to judge from the summaries of their conversations—frequently talked at cross-purposes.

Nonetheless, a few generalizations seem warranted. For one thing, there was broad, though not unanimous, agreement among those present that the preservation of market rivalry tends to promote the public interest (somehow defined). For another, there was consensus that public sanctions should be invoked only against those restraints of trade which are unreasonable; there was but limited support for per se rules. Finally, it was broadly agreed that, in view of the difficulties in assessing the economic effects of a given restrictive agreement, law-enforcement officers must be rugged empiricists.

As these summary observations should indicate, the conferees trod on familiar paths. From their point of view, no doubt, the exchanges of information and ideas proved valuable. The same cannot be said for the nonparticipant forced to rely on the proceedings of the conference. Not only does the published record reveal little that is new or startling, but it lacks the full flavor of what must have been vigorous interchanges among knowledgeable persons. To put it directly, the colloquies appear unmistakably to have been strained through the fine mesh of the four *rapporteurs*, losing in the process both body and bouquet.

For all this, the record of the conference is of some value to specialists and nonspecialists alike. It constitutes a handy guide to cartel law and its administration in a large number of nations. It contains a fairly extensive, even if none too profound, treatment of differences in national policies toward restrictive agreements, together with the reasons therefor. And it re-emphasizes in a variety of ways the impossibility of molding diverse national economies in the image of a single, "universal" theoretical model.

MORTON S. BARATZ

Bryn Mawr College

Antitrust in the Motion Picture Industry: Economic and Legal Analysis. By MICHAEL CONANT. Berkeley: University of California Press, 1960. Pp. ix, 240. \$5.50.

Utilizing the antitrust cases in the motion picture industry, the voluminous

record of the Paramount case (United States v. Paramount Pictures, 334 U.S. 131 [1948]), the critical literature in economic and legal journals, congressional investigations, and fifteen years experience with the Paramount decrees, Michael Conant has made an analysis of superior quality. It goes far beyond the limited scope of earlier works to concentrate on the economic consequences of a tightly controlled pattern of systematic discrimination. Among empirical studies of discrimination it ranks with the best.

Monopoly power in the industry did not emerge originally from control of supply. To be sure, certain institutional factors—copyrights, patents, preclusive control of personnel, censorship—provided the potential means for controlling supply, but, as Conant puts it (p. 39): “monopoly power sufficient to control supply could be enforced only at the exhibition level.” Producers had to establish market control if they were to achieve monopoly power. This compelling necessity dictated the grand strategy of the industry. The implementation of this strategy resulted in one of the most perfect patterns of discrimination ever devised.

The key to the system was ownership of first-run theaters by the Big Five producers. This attained, they established a complicated, rigid pattern of discrimination in respect to licensing runs, clearances, zoning and admission prices—all directed toward maximization of profit. The rules of the game were ruthlessly enforced by local Film Boards of Trade, dominated by the Big Five. Independent producers were excluded from the market; independent exhibitors were relegated to the bottom of the market hierarchy and forced, by block booking, to take low-grade, unwanted films in order to get any good ones. Three small firms, who owned no theaters, were dragooned into joining the combination. The Big Five compromised their oligopolistic rivalries by market-sharing, interchange of films and pooling of profits. The federal government, for some twenty years (1926-45), not only condoned, but “fostered and abetted” this monopolistic arrangement.

The Paramount decision broke the back of the motion picture cartel. In 1945 there were only 40 small, independent producers, who made less than 5 per cent of the class A films; by 1957 there were 165 independent producers, who made more than 50 per cent of the class A films. In Conant's own words (p. 219):

The decrees of divorcement and divestiture effectively put an end to the organized control of the industry. . . . The major's near monopoly of first-run theaters was broken. . . . Subsequent-run theaters were relieved of the oppressive restrictions of block booking. Divorcement also curtailed the monopoly power of the five majors on the distribution level. Other distributors and independent producers were given freer entry to compete in the market for screen time.

The Paramount structural changes, however, failed to achieve perfect competition. The Big Five still dominated production and distribution. The divestiture of 1200 theaters by the Big Five left in existence 5 formidable theater circuits concentrated, as before, in particular areas. The old pattern of discrimination and price fixing remained substantially intact. Conant is se-

verely critical of the Court's failure to reorganize the marketing system. He feels that the large theater circuits should have been fragmented, competitive public auction-bidding for films made compulsory, clearance agreements prohibited and dead time between runs eliminated. Exhibitors continue to complain about discrimination and excessive film rentals, and advocate either compulsory arbitration or public utility regulation for their protection. The author has no confidence in either of these prescriptions; he would rely on the widest possible dispersal of market power and free entry of rivals into the market.

The admirable quality of the author's empirical research is somewhat marred by his equivocal conclusions about discrimination and public policy relating to it. The nature of the product and the market, he thinks, makes some pattern of discrimination necessary. Since neither production nor exhibition is, or can be, perfectly competitive "public policy requires that distributors be free to adopt the pattern of release and rental discrimination that they consider optimum" (p. 215). Otherwise, he assumes, production may decline, rental and admission prices rise, some theaters close, and people see fewer pictures.

There is a contradiction here between the analysis and the policy prescription. Conant criticizes the Paramount decrees for their failure to make the market more competitive. His own recommendations for market reorganization, if adopted, would reduce discrimination to minimal proportions. He is a staunch advocate of free competition, dispersal of market power and freedom of entry. These antimonopoly views are strangely inconsistent with the conclusion that distributors should be free to discriminate. Discrimination can scarcely be justified by the supposition that untoward economic consequences for beneficiaries might result from its demise. This is the price that must be paid for economic freedom.

HORACE M. GRAY

University of Illinois

Government Promotion of American Canals and Railroads, 1800-1890. By

CARTER GOODRICH. New York: Columbia University Press, 1960. Pp. viii, 382. \$7.50.

In this book Carter Goodrich presents a well-ordered and comprehensive review of the range of public support in varying forms that went into building the major heavy-duty transport system of nineteenth century America. In addition to treating the better-known examples of federal and state action—the early plans, the Erie Canal, the Pennsylvania State Works, the trans-continentials, etc.—the author has brought together the results of recent research into the extensive activities in which federal, state, and local governments engaged in all parts of the United States, both before and after the Civil War. After an admirable short chapter setting the stage, temper, and tempo of the times, the book examines the scope of federal policy and action for each period, and then devotes more than half its pages to the subsequent "Emulation of States and Cities" in the same undertaking.

The survey drives home on a broad front what had been established for more limited sectors by a growing roster of monographs, many under Goodrich's direction: that the basic developmental transportation of this country, like comparable social overhead elsewhere, came into being when and where it did only by massive public assistance. To open new territories and accelerate the exploitation of their potentials, nineteenth century Americans readily turned to public treasuries for tasks too large for private capital.

What was distinctive about U.S. patterns, Goodrich emphasizes, was not the use of public funds, but other characteristics: First, the pluralism and pragmatism of the effort, involving decision and extensive financing at local and state levels as well as federal and private, with any and all sources of funds operating through enterprises that were usually private, often mixed, and sometimes public. A second feature was the extent to which the exploitation of the resulting opportunities was left to the spontaneous individual decisions of private interests, and the speed and vitality of these responses. Once the cogent program Gallatin offered in 1808 had been abandoned, there was almost no centralized planning of transport development; and there was virtually no planning at all of the actual flow of people and capital into the agricultural and complementary activities that transport allowed. The record reveals instead a rich, gaudy, wasteful, multicentered scramble by which for the first time the resources of a continent were successfully brought into play in two or three generations.

The story is a remarkable epic by any standards. It runs from the project of the National Road (1806), through the early visions of Washington, Gallatin, and J. Q. Adams, to the dominance of sectional interest and later of private finance. It includes early canals projected over mountains, the attempts to use horses and even sail on the pioneering B&O railroad, the promotional conviction of Asa Whitney in the 1850's that a transcontinental railroad would make Europe "bow to Asia, and Asia to Europe, across our bosom." At a deeper level it raises lasting issues of public policy in the use of resources and the regulation of enterprise. By posing the question of what *would* have been the condition of transportation at the mid-century (or even in 1890) without public funds, it suggests another question on which we all can speculate: Whether the Union would have remained one if railroads in the decade before the Civil War had not provided east-west transportation possibilities to large areas of the Ohio and Mississippi valleys that until then had been forced to depend on a southern outlet through New Orleans?

The book pursues no such speculations. Its strength is in its orderly presentation of the known, in the completeness of its coverage of the much less known regional activities, and in the good sense of its evaluation of the problematical. The historian will miss the color and specifics of particular ventures and the ways in which given transportation developments affected given communities—necessarily excluded by the scope of the work—and maps which should have been provided beyond the single one offered. The economist will wish the book had done more to relate magnitudes of investment in these facilities to the prevailing levels of total investment. Direct and indirect effects of transportation expenditure on the business cycle and on the structure and

trend of the economy get spare mention, and the changing technology virtually none. The focus is rather on the locus of funds and decision-making and on the politico-economic instruments of action through which they moved. Of this it provides an extremely useful synthesis, with judicious comparative observations on procedures in other nations and how far this experience is or is not relevant for underdeveloped economies today.

JOHN E. SAWYER

Yale University

Problems of Public Enterprise—Thoughts on British Experience. By B. V. V. RAMANADHAM. Chicago: Quadrangle Books, Inc. and London: Frank Cass & Co., 1959. Pp. 176. \$4.75.

The author of this book, first published in London under the title *Public Enterprise in Britain*, has observed at first hand the working of public enterprise in England, which can be considered an experiment by the rest of the free world. He has coupled objectivity with acute economic perception, and has produced a clear and penetrating study of the working of nationalization in industry.

The book does not attempt to argue the case for or against nationalization. Rather, on the assumption that some nationalization is already here and is likely to remain, and more may be forthcoming, the author discusses a number of important problems of nationalization including organizational arrangements, management, accountability, pricing, resource allocation, capital financing, subsidies, consumer representation, and public control. The book is addressed to both economists and public administrators in the hope that it may be used to obtain the most satisfactory results possible under nationalization. No attempt is made to cover all aspects of nationalization nor to present full studies of individual nationalized industries, except in part, electric power.

A careful study of recent British experience in the field of public enterprise has much to contribute toward better understanding of the problems and difficulties of a public sector gradually being enlarged on economic (efficiency) rather than political grounds. The British scene offers advantages of considerable homogeneity inasmuch as all of the recently nationalized industries have been given the public corporation form of organization, and all resulted from the taking over of existing private enterprises. In India, in contrast, certain nationalized industries were created initially by the central government.

The public corporation as an institutional form of industrial organization is here to stay. It is defined as a nationalized industry which is not organized as a governmental department nor run by a local authority nor given joint stock company form, and which operates on the principle of financial self-support. It has private status and ability combined with public purpose and responsibility. An example in this country is the TVA. The book attempts to work out a norm or optimum toward which the public corporation should strive if it is to achieve all its basic objectives in the most satisfactory and efficient manner.

One pioneering feature of the book is a discussion of the role of the public corporation in an underdeveloped nation, in which managerial leadership is a major problem. In the case of Britain the same management largely was used

under public operation as under private operation of industry. This has not been true of India and other countries. It is the author's observation, supported by American experience, that successful private businessmen are not best suited always to appointment to the boards of nationalized industries. Thus civil service in certain countries has a major problem on its hands.

The autonomy of public corporations in an underdeveloped nation must be qualified to counter not only regional inequalities but also those among broadly distinguishable consumer groups. The implementation of social policy objectives is not incompatible with corporate autonomy providing certain limitations on social policy are written into the basic Acts. The success of public enterprise always depends upon a proper balance between economic and political considerations.

In the case of cross-subsidization such as in the rural areas of North Scotland, the author argues that the taxpayers in general should pay any subsidies involved and not particular power users, usually urban consumers. The optimum economic unit is achieved at the lowest point of the average total cost curve. The optimum managerial unit is exceeded if expansion to promote rural electrification results in higher rates to urban groups. There is no incompatibility, however, in different prices to different consumer groups so long as the prices charged are less than the cost of alternative sources of the same product or service. This is the discrimination case as contrasted with the cross-subsidization case.

One of the advantages of nationalization is that it can remove certain market imperfections and at the same time achieve certain external economies. It does not, however, automatically solve all problems of monopoly. The profit motive is gone, to be sure, but questions of high costs through inefficiency, prices unrelated to costs, and nonprice related input-output problems remain.

This little book is well worth reading, and it makes a valuable contribution to the economic and public administration literature.

E. K. ZINGLER

University of Houston

Ferrocarriles. By CARLOS VILLAFUERTE. Mexico, D.F.: Fondo de Cultura Economica, 1959. Pp. xix, 281.

This volume is an excellent study of the present condition of the Mexican railroads. It is part of a large-scale study of "the economic and social structure of Mexico" sponsored by the Mexican government's development bank Nacional Financiera. Unlike some other volumes in the series, this one is exceedingly well done. It is written with an objectivity and forthrightness that is a tribute to Mexican scholarship.

The author is fully aware of the sad shape into which the Mexican railroads have been allowed to fall. This decline has come as the result of the long process of the Revolution, and the concentration of successive governments on problems which have seemed to them more pressing. However, he is moderately optimistic about the possibility of rebuilding the railroad system and of their continuing to play a key role in the nation's economy.

The volume discusses many aspects of the functioning of the country's railroad system, including labor force, capital equipment, and technical and financial resources. It also describes at length the actual state of the various lines in the Mexican system; and discusses the modernization program underway during the last half-dozen years. This program, partly financed by foreign loans, includes not only improvement of existing lines and the extension of the system, but also extensive renovation of the rolling stock. The author presents his assessment of the importance of various improvements being undertaken.

The last part of the book is a discussion of the problems facing the Mexican railroad system. Many of these would make familiar reading to anyone in the least familiar with the state of U.S. railroads today. One basic obstacle to improved efficiency of the Mexican roads lies in the strong position of the railway workers union. This organization, like its northern counterparts, is regarded by the author as likely to be strongly opposed to any move which would reduce employment on the railroads. He suggests the need for close consultation with them in making out programs for increasing the utility of the railway system.

Another basic problem is the competition between the railroad system and the growing highway network. The author points out that the railways have been carrying a steadily smaller percentage of the country's freight and passenger traffic, due largely to this competition. However, he does not think that this decline necessarily need continue. He points out that highway traffic has certain disadvantages, such as the growing amounts of equipment and fuel which must be imported from abroad. He presents figures to show that if the railroads can improve their efficiency to the degree foreseen as a result of the modernization program, they can compete economically for many kinds of traffic.

However, the author does suggest certain changes in present-day procedures. He advocates coordination of government roadbuilding with railway construction and renovation projects, so as to provide feeder roads for the railways as often as possible and competitive highways as infrequently as possible. He also favors a revision of the railroad rate schedules, changing their base and increasing some tariffs, so as to make the railroads as nearly self-sustaining as possible.

Another problem reminiscent of the situation in the United States is that of integrating the whole nation's railroad system. It is not as complicated in Mexico as north of the border, since virtually all roads are owned by the government. However, the author sees a need for establishing a unified rail network, and as a starting point, the establishment of several well-delineated regional systems. He foresees considerable possible savings and increased efficiency in unified repair facilities, as well as in the establishment of uniform rate schedules and by facilitating train shipment of goods over more than one of the existing railroad systems.

Other suggestions of the author are peculiar to Mexico. For instance, he feels that the country's railroad system would benefit considerably from an

increase in the capacity of the nation's steel industry. This would make it possible to produce a much larger proportion of rolling stock and other equipment in the country, thus saving on foreign exchange. He is also concerned with the role of the railroads in "opening up" parts of the country at present virtually outside of the national economy, and believes that the establishment of such lines should be decided upon the basis of broader national economic considerations rather than merely the finances of the railroads themselves. Finally, he suggests the need for a much more ample official survey of the Mexican railroads, to be used as the basis for future planning of the country's network.

This book is a very worth-while contribution to an understanding of the economy of present-day Mexico. As the first over-all study of the Mexican railroads, it should be useful not only to those concerned with the future development of the Mexican economy, but to foreign students of the subject as well.

ROBERT J. ALEXANDER

Rutgers, The State University

Labor Economics

The CIO Challenge to the AFL. By WALTER GALENSON. Cambridge: Harvard University Press, 1960. Pp. xix, 732. \$9.75.

This volume, part of the Harvard project on labor-management history in recent decades, covers developments in the labor movement between 1935 and 1941. More specifically, the author deals with the genesis of the CIO, with the organization of the steel, automobile, and other mass-production industries, with the labor thrust in coal mining, clothing, meat, lumber, petroleum, the maritime industry, with the Teamsters, the Machinists, the building trades, the printing and publishing unions, and the railroad labor organizations. And there is a final chapter which focuses on some general dimensions of the labor movement during this period—union membership, union finances, work stoppages, political activity, legislation, etc.

To survey accurately and constructively so vast a field in approximately 700 pages is a formidable task indeed. But Galenson has for the most part succeeded admirably. He has culled from the welter of available material the salient features of each problem and described them with a striking economy of language. As one might expect, some chapters are more detailed than others. Thus, for example, those on the Machinists and the printing and publishing unions seem somewhat sketchy to this reviewer. But perhaps such variation in coverage was unavoidable, given the absence of equally numerous dramatic and important events in the various unions on the one hand, and the lack of relevant informational sources for some of the developments in certain unions on the other.

The volume is essentially a descriptive one; and the description, it should be hastily added, is both dispassionate and judicious. Here and there Galenson does make brief forays into analysis. And it is precisely because these forays

reflect such keen insight that it is regrettable he did not dig more intensively and extensively into the determinants accounting for the developments which he has described so well. To be sure, a good deal of such analysis would, of necessity, have assumed the character of hypothesis rather than proven theory. But hypotheses coming from someone of Galenson's competence who has dug so carefully into the "raw material" would have been more than just desirable; it would have proven extremely useful to other researchers. For instance, in dealing with union membership data from 1935 to 1941, the author makes no attempt to specify the determining factors and their interaction which were responsible for shaping the pattern of union growth during those years. Yet such a theoretical stab by one so familiar with the period would have proven most suggestive to those scholars who are groping for a general theory of union growth.

Despite the inadequacy of the analysis, however, this book is a first-rate piece of scholarship that provides the reader with a vivid and meaningful picture of developments during those dramatic six years which were truly one of the major turning points in the orientation of the U.S. labor movement. It is an excellent descriptive synthesis of the period, which was sorely needed. And Galenson is to be highly commended for filling so important a gap in the literature in so competent a manner.

JOSEPH SHISTER

University of Buffalo

Wages and Earnings in the United States 1860-1890. By CLARENCE D. LONG. Princeton: Princeton University Press, for the National Bureau of Economic Research, 1960. Pp. xvii, 169. \$4.00.

American industrial growth began in earnest in the decades that followed the Civil War. Pig iron production rose from under a million tons in 1860 to 10 million tons in 1890. Employment in manufacturing and construction tripled. An overwhelmingly agrarian nation in 1860, the United States was vying with Great Britain for industrial supremacy thirty years later.

It is with this critical period in our development, one that deserves much closer study than it has received for the light it can throw on the problems of economic growth, that Professor Long is concerned. Using the same basic data as other investigators before him, those contained in the Aldrich Report, the Weeks Report, and Bulletin 18 of the Department of Labor, but employing different averaging and weighting procedures, he finds that money wages rose by about 50 per cent from 1860 to 1890. This is substantially less than the indicated increase in the index prepared by Wesley C. Mitchell, heretofore the standard wage index for the period.

To deflate the money-wage series, Long uses, for the years 1860-1880, a new cost-of-living index prepared by Ethel D. Hoover for the National Bureau of Economic Research. For the following decade, Long has worked up his own index in place of the Burgess index, the only one available up to now. On the basis of the revised data, it appears that living costs were almost the same in 1860 and 1890, so that the advances in money and real wages were identical, that is, about 50 per cent. A substantial part of the increase came in the third

decade as a result of an increase in money wages (15 per cent) and a decline in the cost of living (11 per cent).

If there were any criticism to be made of this impeccable study, it would involve Long's cost-of-living index, so crucial to the novelty of his findings. Clearly superior to the old Burgess index, it is nevertheless based upon a thin sample of price data. Long himself says with candor: "How accurately this new index measures the cost of living is probably impossible to say . . . it is undoubtedly inferior to modern indexes, and could surely be improved by an exhaustive investigation of newspaper advertisements, store catalogues, and business and family records."

The latter part of the study is concerned with an analysis of wage structure. And in conclusion, Long asks: why was the annual real wage advance from 1860 to 1890 only 1.6 per cent, a tempo of "allegretto rather than allegro?" The answer is couched in terms of the rapid growth of the industrial labor force due to immigration and movement out of agriculture, the drawing off of available resources for heavy capital investment, and the absence of strong trade unions. Even in as richly endowed a nation as the United States, a relatively austere period of capital formation had to precede expanding consumption.

This monograph represents the method of quantitative historical analysis at its best. The statistics are set forth clearly, and we are kept informed as to how they are manipulated. Their defects, as well as their virtues, are discussed fully. The fashionable practice of loading data with a heavier theoretical superstructure than they are capable of bearing is scrupulously avoided. Instead of glittering generalizations of only passing interest, we have something of far more enduring value, a piece of fundamental knowledge about a very important aspect of U.S. history. It is regrettable that the work was not finished in time for inclusion in the 1960 edition of *Historical Statistics of the United States*. Those who use that volume are on notice that the early wage data are supplanted by Long's findings.

WALTER GALENSON

University of California, Berkeley

Wages in the Metropolis: Their Influence on the Location of Industries in the New York Region. By MARTIN SEGAL. Cambridge: Harvard University Press, 1960. Pp. xi, 211. \$4.75.

The New York Metropolitan Region Study, a pioneer series that is surveying the economic and demographic elements in the country's biggest metropolitan area, has developed several types of economic analysis. In the initial volume, *Anatomy of a Metropolis*, it presented an over-all view of the region's manufacturing economy. It probed deeply into three of the area's key industries in the second, *Made in New York*. (The third monograph dealt chiefly with social problems.) Now, the fourth work in the series, *Wages in the Metropolis*, employs still another approach: an examination of the economy from a particular vantage point, namely, the role of wage levels and labor skills in influencing the location and development of industries within the region.

Segal drew a difficult assignment, for relatively little statistical data prepared by the government or private research organizations readily lend themselves to comparisons between wages in metropolitan regions. The result was a highly critical and selective use of printed sources of information, supplemented by dozens of interviews with business men, union leaders, and government officials. The latter undoubtedly gave him an invaluable apperceptive basis for evaluating the statistics on which his findings rest.

The industrial structure of the metropolis is never static—some industries leave the region or succumb altogether; at the same time, new industries gain a foothold. This study indicates that the region is most likely to lose manufactures or branches of manufacturing whose operations have become so mechanized or standardized that they can employ unskilled and low-wage operators. Industries which require rapid service, which involve rapid changes in fashion or design, or which turn out a highly variable product are most likely to remain. The region has also become a nursery for a wide variety of industries in the formative and experimental stage, for they require a large pool of skilled craftsmen as well as patent experts, legal advisors, and financiers. No comparable area in the country is as well equipped to fulfill these needs.

Wages in the Metropolis has deepened and broadened our understanding of the economic forces that tend to attract and disperse industries in the region, but it has not added a new dimension to our knowledge of the subject. Readers of the volumes that preceded it in the series will find little that is startlingly new. Let me hasten to add that this fact in no way reflects on the intelligence, expertness, or zeal on the part of the author, for these qualities are all conspicuously demonstrated in this work. Like all who venture into new and undeveloped areas, some researchers find a rich lode of materials; not all are equally fortunate. By studying the subject from a particular angle, Segal has confirmed previous findings in the series and added an increment of knowledge about the economy of the region, aptly called the "archetype of the American metropolitan community."

FREDERICK SHAW

The City College

Trade Unionism in Underdeveloped Countries. By SUBRATESH GHOSH. Calcutta: Bookland Private, Ltd., 1960. Pp. ii, 410. Rs 20.

Trade unionism in South East Asia, India, and Pakistan is the phenomenon under examination. The author's twin goals are to determine how trade unions are affected by economic development and "to what extent . . . organised labor can help in hastening the process of growth itself in a developing economy." The book is a description of trade unionism in the area and a blueprint of the kind of unionism that he would like to see created there. He carries the history of the labor situation from the beginnings of unionism through 1956. In writing the book the author has leaned heavily on his experience and contacts at the I.C.F.T.U. Asian Trade Union College in Calcutta.

In addition to a good social and psychological analysis, as well as a reasonably good economic analysis, of the labor-management situation in the region

studied, Ghosh presents his own theory of the origin of unionism. He finds it in the strains resulting from capital accumulation and the distribution of its burden.

Unions in Southern Asia have developed under the influence of the national liberation movements. Accordingly, the leaders are usually nationalistic politicians. The unions are generally small in size (*e.g.*, in India during 1953-54 the average size was 641), frequently one-shop affairs, possess infinitesimal treasuries, and rely very much on "outside" leadership. Rival unionism plays an important role. In Indonesia, India and Burma political parties control the unions. The shop-steward system is completely absent, and chronic unemployment exerts its influence. In a free test of strength with the employers, who have a Kohler-type mentality, the unions would generally come out second-best. As a result, the Asian unions depend heavily on government help.

Among the ways the author suggests by which unions can aid economic development are the following: First, by making themselves strong in order to defend and promote the workers' interests, they will create self-confidence among the workers "and will remove from their minds the sense of being exploited" (p. 391). Second, the unions may establish and aid workers' education programs, cooperate with the government or employers in getting workers to undertake vocational training, and effectively participate in joint productivity councils. Third, capital formation could be promoted by the unions through "promoting and assisting in the small savings schemes" and "by organizing voluntary labor squads for road building and other similar projects" (p. 392).

Establishing educational-and-recreational centers, organizing active recreational programs, and creating decent cooperative housing in conjunction with government or industry, are all ways in which the unions can aid the recently uprooted labor force to adjust to industrialization and urbanization.

The author emphasizes the fact that insufficient finances as a result of inadequate dues collection is one of the major weaknesses of Asian unions. Yet he too readily dismisses the check-off as a technique, his reason being that the employers would thus gain knowledge of the membership and financial strength of the union. This would only be significant as an argument in the early stages of unionization and certainly does not outweigh the advantages of the check-off to an established union.

From time to time Ghosh makes references to the American scene, in a significant number of which he demonstrates a shallow knowledge of the American labor movement. Thus he says that the development of collective bargaining activities in the United States dates back only to the National Labor Relations Act of the 'thirties (p. 287).

While discussing the influence of foreign organizations, foreigners within the Asian countries, and returning Asiatics, the author remarks, "It is interesting to note in this connection that the trade union movements in Europe and North America were comparatively far less influenced by foreign influence in the early stage of their development" (p. 66). In this he fails really to appreciate the influence of foreign-born leaders in establishing the American needle trades unions, maritime unions, and those of the building trades, to

mention but a few. In addition, the role of Samuel Gompers should never be underestimated. The various socialist internationals also played key roles in Europe.

Although there are some shortcomings, a number of which have been pointed out, Ghosh's book is a valuable contribution to the literature. It is a storehouse of information on Asian unions. His emphasis on the human elements involved in development, together with his good social and psychological analysis of labor-management relations in the area, make his book one that should be read by serious students of economic development and of comparative labor movements.

EDWARD ROSENBAUM

Tel Aviv, Israel

Employment Relations Research: A Summary and Appraisal. Edited by H. G. HENEMAN, JR., L. C. BROWN, M. K. CHANDLER, R. KAHN, H. S. PARNES, and G. P. SHULTZ. New York: Harper, for the Industrial Relations Research Association, 1960. Pp. ix, 226. \$3.50.

This volume is the companion to the Industrial Relations Research Association's *A Decade of Industrial Relations Research, 1946-1956*, published in 1958. Like its predecessor, *Employment Relations Research* is intended to summarize research findings and note the gaps in our knowledge in basic areas. The title, unfortunately, is both inexact and forbidding. A work of this sort can be useful if carried out successfully. There are pitfalls: the essay may degenerate into either an uncritical catalogue of the literature or a generalized statement of the author's views with little regard for the literature.

Employment Relations Research is an uneven work which suffers from both of these defects. It contains two distinguished contributions—Herbert S. Parnes on the labor force and George P. Shultz and Arnold Weber on technological change; a successful summary by George W. England and Donald G. Paterson on selection and placement; a catalogue on compensation by David W. Belcher (361 footnotes!); and vaporous essays by David Dolnick on the history and theory of the labor movement, and by Gordon F. Bloom and Herbert R. Northrup on dispute settlement. The Dolnick piece, despite its title, hardly deals with history at all. The Bloom-Northrup essay fails to review the literature and sets forth opinions concerning the nature of industrial conflict and its accommodation with which this reviewer heartily disagrees.

The Parnes summary is a testimonial to the remarkable advance in knowledge concerning the labor force and labor markets in the past generation. Some of his findings are of interest. Our present labor force concepts, worked out in the 'thirties, are intended to guide public policy in dealing with mass unemployment; they are not as satisfactory for the purpose of finding scarce manpower under a condition of full employment. There appears to be long-run stability in the total labor-force participation rate. But this conceals significant changes among demographic subgroups—declining rates for very young and very old men, increasing rates for women, etc. There is an inverse relationship between labor-force participation by married women and the income of their husbands. At the moment we do not know the relationship between em-

ployment and the labor force. Similarly, no one has yet successfully defined a labor market. Labor mobility appears to be greater in the United States than in Europe and most job changes seem to be "complex," that is, involve simultaneous shifts in employer, occupation, and industry, but not geography. The conventional factors influencing mobility—age, sex, race, occupation—appear less important than personal determinants about which nothing is presently known. Finally, Parnes writes, "All of the empirical studies of labor markets make it abundantly clear that there are wide departures between the actual labor market behavior of both workers and employers and the assumptions on which the traditional theory of wage determination and labor allocation is based."

Shultz and Weber devote special attention to the burgeoning literature on automation, much of it in the realm of science fiction. The new technology brings with it cleaner and safer working conditions accompanied by tensions stemming from the social isolation of the worker and the integration of the work process. The research on the employment effect is too narrow thus far to assess the impact of technological change on employment in the whole economy. The impact of automation on skills is mixed; the expectation of general upgrading has not been realized. The new technology seems not to have destroyed incentive wage systems, as many anticipated. Likewise, automation appears to have had less effect upon trade-union and management structures than some thought. The authors conclude, "A moratorium on unverified projections about the effects of automation on industrial relations now seems in order."

These two essays and the third on selection and placement give helpful summaries of contemporary research findings and indicate the gaps that remain.

IRVING BERNSTEIN

University of California, Los Angeles

TITLES OF NEW BOOKS

General Economics; Methodology

BAADE, F. *Der Wettlauf zum Jahre 2000—unsere Zukunft: ein Paradies oder die Selbstvernichtung der Menschheit.* Oldenburg: Gerhard Stalling, 1960. Pp. 304. DM 19.80.

BULHOES, O. G. de. *Economia e politica economica.* Rio de Janeiro: Agir Edit., 1960. Cr \$250.

FELLNER, W. *Emergence and content of modern economic analysis.* New York: McGraw-Hill, 1960. Pp. xiv, 459. \$7.50.

FREEMAN, R. E. *Postwar economic trends in the United States.* New York: Harper, 1960. Pp. viii, 384. \$6.

This book presents a survey of postwar developments in ten different aspects of the American economy. After a brief survey of some general problems of American society and of economics in America, it describes developments in postwar monetary policy, income distribution, fiscal policy, labor problems, regional distribution, corporate enterprise, corporate capital investment, and international trade in the United States. This book is not designed to give an integrated picture of the postwar structure of the American economy; it is a collection of essays, each presenting a workman-like job and testifying to the high professional caliber of the Department of Economics and Social Science at MIT. The book should be very useful supplementary reading for students of economics.

SMYTH, R. L. *Economics. Reader's Guides 4th ser. no. 3.* New York: Cambridge Univ. Press for National Book League, 1960. Pp. 30. 75¢.

A bibliography in economics for the Oxford Honour School of Philosophy, Politics and Economics. 2nd ed. London: Oxford Univ. Press, 1960. Pp. 82. 6s, 6d.

Classics in economics—a course of selected reading by authorities. New York: Philosophical Library, 1960. Pp. xxxi, 324. \$6.

Encyclopédie française vol. 9: L'univers économique et social. Société Nouvelle de L'Encyclopédie Française. Paris: Larousse, 1960. \$25.

International bibliography of economics. Vol. 7, works published in 1958. Prepared by the Internat. Com. for Soc. Sci. Documentation with the Internat. Econ. Assoc. for UNESCO. English and French. New York: Columbia Univ. Press, 1960. Pp. 528. \$10.50.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

BENSUSAN-BUTT, D. M. *On economic growth—an essay in pure theory.* New York: Oxford Univ. Press, 1960. Pp. vi, 215. \$3.40.

BOULDING, K. E. AND SPIVEY, W. A. *Linear programming and the theory of the firm.* New York: Macmillan, 1960. Pp. ix, 227. \$6.

HAZLITT, H., ed. *The critics of Keynesian economics. Discussions by J. B. Say, J. Viner, F. Knight, E. Mantoux, L. von Mises, A. Burns.* Princeton, N.J.: Van Nostrand, 1960. Pp. viii, 427. \$7.

JOHNSON, J. *Statistical cost analysis.* New York: McGraw-Hill, 1960. Pp. ix, 197. \$6.50.

KALDOR, N. *Essays on economic stability and growth.* Glencoe, Ill.: Free Press, 1960. Pp. 302. \$6.75.

———. *Essays on value and distribution.* Glencoe, Ill.: Free Press, 1960. Pp. 238. \$6.

LITTLE, I. M. D. *A critique of welfare economics.* 2nd ed. New York: Oxford Univ. Press, 1960. Paperback ed. Pp. 302. \$2.25.

- MATHUR, J. S. *Essays on Gandhian economics*. Allahabad: Chaitanya, 1960. Pp. 86. Rs 3.
- MEHTA, J. K. *Lectures on modern economic theory*. Allahabad: Chaitanya, 1959. Pp. xxii, 221. \$3; Rs 7.50.
- PONSARD, C. *Histoire des théories économiques spatiales*. Paris: A. Colin, 1959. Pp. 202.
- UHR, C. C. *Economic doctrines of Knut Wicksell*. Berkeley and Los Angeles: Univ. of California Press, 1960. Pp. xv, 356. \$7.50.

Economic History; Economic Development; National Economies

- AKERMAN, J. *Theory of industrialism: causal analysis and economic plans*. Lund soc. sci. stud., no. 19. Lund, Sweden: C. W. K. Gleerup, 1960. Pp. 332. 25 SKr.
- ARDENER, E., ARDENER, S. AND WARMINGTON, W. A. *Plantation and village in the Cameroons: some economic and social studies*. New York: Oxford Univ. Press for Nigerian Inst. Social and Econ. Research, 1960. Pp. xxxvi, 435. \$8.
- CARSWELL, J. *The South Sea Bubble*. Stanford: Stanford Univ. Press, 1960. Pp. xi, 314. \$5.50.
- DE PRADA, V. V. *Lettres marchandes d'Anvers*. Vol. 1: introduction. École Pratique des Hautes Études, 6th section: affaires et gens d'affaires, no. 15. Paris: S.E.V.P.E.N., 1960. Pp. 355.
- DUNCAN, O. D. AND OTHERS. *Metropolis and region*. Baltimore: Johns Hopkins Press for Resources for the Future, 1960. Pp. 587.
- ERLICH, A. *The Soviet industrialization debate, 1924-1928*. Cambridge: Harvard Univ. Press, 1960. Pp. xxiii, 214. \$6.
- FELIX, D. *Desequilibrios estructurales y crecimiento industrial—el caso Chileno*. Santiago: Inst. Econ. Univ. Chile, 1958. Pp. 60.
- HOUGHTON, D. H. *Economic development in a plural society*. Studies in the border region of the Cape Province. New York: Oxford Univ. Press, 1960. Pp. xv, 401. \$9.60.
- HUGON, P. *Le progrès technique; les formes de production*. Excerpts from *Traité d'économie politique*, vol. 1, pt. 2. Paris: Dalloz, 1960. Pp. 106.
- ISARD, W. *Methods of regional analysis: an introduction to regional science*. New York: Wiley and Tech. Press of Mass. Inst. Tech., 1960. Pp. xxix, 784. \$9.50.
- ISLAM, N. *Foreign capital and economic development: Japan, India and China*. Studies in some aspects of absorption of foreign capital. Tokyo, and Rutland, Vt.: C. E. Tuttle, 1960. Pp. 253. \$5.
- JERVIS, F. R. *The evolution of modern industry*. London: Harrap, 1960. Pp. 320. 18s.
- JORDAN, W. K. *The charities of London 1480-1660: the aspirations and the achievements of the urban society*. New York: Russell Sage Foundation; London: Allen & Unwin, 1960. Pp. 463. \$6.
- KAHL, W. F. *The development of London livery companies: an historical essay and a select bibliography*. Kress Lib. bus. and econ. pub. no. 15. Boston: Harvard Grad. School Bus. Admin. Pp. viii, 104.
- KHROMOV, P. A. *Ocherki ekonomiki Rossii perioda monopolisticheskogo kapitalizma*. (Essays on the Russian economy in the period of monopoly capitalism.) Moscow: 1960. Pp. 240.
- KIMBLE, G. H. *Tropical Africa*. Vol. 1, Land and livelihood. Vol. 2, Society and polity. New York: Twentieth Century Fund, 1960. Pp. 603; 506. \$15.
- KIRBY, E. S., ED. *Contemporary China—economic and social studies, documents, chronology, bibliography*, Vol. 3, 1958-59. Hong Kong: Hong Kong Univ. Press; London: Oxford Univ. Press, 1960. Pp. xi, 439.
- LAMBERT, D. *Les inflations sud-américaines*. Inflation de sous-développement et inflation de croissance. Travaux et mémoires, vol. 5. Paris: Inst. des Hautes Études de L'Amérique Latine, Univ. de Paris, 1959. Pp. 580.

- LEVIN, J. V. *The expert economies—their pattern of development in historical perspective.* Cambridge: Harvard Univ. Press, 1960. Pp. xiv, 347. \$6.75.
The book "... employs a combination of general analysis and case studies. The general analysis is pointed at exploring the strategic facts and relations in the pattern of all the export economies' development." The principal case studies are: "Peru in the Guano Age," and "Burma's Rice-marketing Board."
- LICHTENBERG, R. M. *One-tenth of a nation: national forces in the economic growth of the New York region.* Supplements by E. M. Hoover and L. P. Lerdau. Cambridge: Harvard Univ. Press, 1960. Pp. xvi, 326. \$6.75.
- MARCUS, E. AND MARCUS, M. R. *Investment and development possibilities in Tropical Africa.* New York: Bookman, 1960. Pp. 286. \$7.50.
- MITCHELL, S. A. S. Z. *Mitchell and the electrical industry.* New York: Farrar, Straus & Cudahy, 1960. Pp. 178. \$5.
- MORRIS, B. R. *Problems of American economic growth.* New York: Oxford Univ. Press, 1961. Pp. viii, 279. \$2.50.
Primarily for the beginning student, and intended for use in connection with the elementary course in economics. "The purpose is to open the way for further study and discussion."
- PAAUW, D. S. *Financing economic development: the Indonesian case.* Center for Internat. Stud., Mass. Inst. of Tech. Glencoe, Ill.: Free Press. Pp. xxxiv, 474. \$6.75.
- PERLOFF, H. S. AND OTHERS. *Regions, resources, and economic growth.* Baltimore: Johns Hopkins Press for Resources for the Future, 1960. Pp. 716.
- SCHILLER, K. *Zur Wachstumsproblematik der Entwicklungsländer.* Kiel lectures n.s. 15. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1960. Pp. 24.
- SILK, L. S. *The research revolution.* New York: McGraw-Hill, 1960. Pp. x, 244. \$4.95.
- STEPANEK, J. E. *Managers for small industry—an international study.* Glencoe, Ill.: Free Press, 1960. Pp. xvi, 245. \$6.
- STOLPER, W. F. *Germany between East and West.* Econ. of compet. coexistence, no. 7. Washington: Nat. Planning Assoc., 1960. Pp. 80.
—, WITH ROSKAMP, K. W. *The structure of the East German economy.* Cambridge: Harvard Univ. Press, 1960. Pp. xxv, 478. \$10.
- THOMPSON, V. AND ADLOFF, R. *The emerging states of French equatorial Africa.* Stanford: Stanford Univ. Press, 1960. Pp. xii, 595. \$8.75.
- THORRINGTON-SMITH, E. *Towards a plan for the Tugela Basin—second interim report of the Regional Survey of the Tugela Basin, prepared in the Office of the Town and Regional Planning Commission, Natal.* Atlas attached. Vol. 5. Pietermaritzburg: Town & Regional Planning Commission, Natal, 1960. Pp. 266; 72. 30s; R3.
- VERNON, R. *Metropolis 1985: an interpretation of the findings of the New York Metropolitan Region Study.* Cambridge: Harvard Univ. Press, 1960. Pp. xiii, 252. \$5.
- Collection of organizational and methodological charts on Czechoslovak government and economy.* New York: Joint Pub. Research Svce., 1960. Pp. 65.
- The economic development of Libya.* Baltimore: Johns Hopkins Press, for Internat. Bank for Reconstruction and Develop., 1960. Pp. xvii, 524. \$7.50.
- Economic programs for labor surplus areas in selected countries of Western Europe.* Materials prepared for the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 15. 25¢.
- Guiding metropolitan growth. Statement on national policy by the Research and Policy Committee.* New York: Com. for Econ. Develop., 1960. Pp. 47.
- Light industry in Communist China.* New York: Joint Pub. Research Svce., 1960. Pp. 50.
- New views on automation.* Papers submitted to the Subcommittee on Automation and Energy Resources, Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 604.

- Problemy rasvitiya proizvoditelnykh sil Kamchatskoi Oblasti. (Problems of the development of forces of production of the Kamchatka Region.) Moscow: Academy of Sciences of the USSR, 1960. Pp. 421.
- Programa interamericano de productividad. Proceedings of Reunión Interamericana de Asesores en Productividad, Mexico, April 18-22, 1960. Washington: Pan American Union, 1960. Pp. 71. \$1.
- Research on underdevelopment; assessment and inventory of research on economic, social and political problems of underdeveloped areas. External research rept., ER-30. Washington: Dept. of State, 1960. var. pp.
- Resistências à mudança: fatores que impedem ou dificultam o desenvolvimento. Selected papers presented at the Seminário Internacional, held in Rio de Janeiro, October 1959. Pub. no. 10. Rio de Janeiro: Centro Latino-Americano de Pesquisas em Ciências sociais, 1960. Pp. 349.
- Review of the economics of the new Czechoslovak Krajs. New York: Joint Pub. Research Service, 1960. Pp. 70.
- Velikobritania: ekonomicheski obsor. (Great Britain: an economic survey.) Moscow: All-Union Inst. for Sci. and Tech. Info., 1960. Pp. 659.

Statistical Methods; Econometrics; Social Accounting

- BLUTH, C. The use of economic statistics. London: Allen & Unwin, 1960. Pp. 249. 28s; paper, 22s.
- "This is an elementary introduction to the sources of economic statistics and their uses in answering economic questions. It is intended primarily for students studying elementary economics in their first or second year at university . . ." (From the preface.) The approach is in terms of a number of selected problems in applied economics; for example: production and employment in the cotton industry since the war; the slump in the motor industry, 1956-57; how much have prices risen since before the war?
- BROWNLEE, K. A. Statistical theory and methodology in science and engineering. New York: John Wiley, 1960. Pp. xv, 570. \$16.75.
- DEMING, W. B. Sample design in business research. New York and London: Wiley, 1960. Pp. xx, 517. \$12.
- GOLDSMITH, R. W. AND SAUNDERS, C., ED. The measurement of national wealth. Internat. Assoc. for Research in Income and Wealth, Income and wealth, ser. 8. Chicago: Quadrangle Books, 1960. Pp. 389.
- LA VOLPE, G. Sistema di contabilità nazionale: struttura dei finanziamenti e dei pagamenti dell'Italia. Milan: Feltrinelli, 1960. Pp. 488; 18 tables bound separately. L. 3.900.
- MORGAN, E. V. The structure of property ownership in Great Britain. New York: Oxford Univ. Press, 1960. Pp. xi, 207. \$5.20.
- POWELSON, J. P. National income and flow-of-funds analysis. New York: McGraw-Hill, 1960. Pp. 550.
- VAINSHTAIN, A. L. Narodnoye bogatstvo i narodnokhoziastvennoye nakoplenie predrevolutsionnoi Rossii—statisticheskoye issledovanie. (National wealth and economic accumulation in pre-revolutionary Russia—a statistical investigation.) Moscow: Stat. Pub. House, 1960. Pp. 483.
- Regional income atlas of Madhya Pradesh. Bhopal: Directorate of Econ. and Stat., Madhya Pradesh, 1960. Pp. 115. Rs 5.
- Statistical data. Population, employment, agriculture, industry, trade, transport, external trade, finance, 1959. English and French. Strasbourg: Council of Europe, Documentation Section, 1960. Pp. cviii, 605. \$5.
- Statistisches Jahrbuch der Schweiz 1959/1960. Annuaire statistique de la Suisse. (In French and German). Basel: Birkhäuser, 1960. Pp. ix, 642. 18.50 sw.fr.
- 1960 Supplement to Economic Indicators—historical and descriptive background. Washington: Supt. Docs., 1960. Pp. viii, 112. 60¢.

Translation and glossary of Bulgarian statistical yearbook 1959. New York: Joint Pub. Research Svce., 1960. Pp. 369.

Trends in the American economy in the nineteenth century. Nat. Bur. Econ. Research, Studies in income and wealth, vol. 24. Princeton: Princeton Univ. Press, 1960. Pp. xi, 780. \$15.

Economic Systems; Planning and Reform; Cooperation

CROSSER, P. K. State capitalism in the economy of the United States. New York: Bookman, 1960. Pp. 158. \$4.

HALM, G. N. Economic systems: a comparative analysis. Rev. ed. New York: Holt, Rinehart and Winston, 1960. Pp. ix, 341.

MICHAL, J. M. Central planning in Czechoslovakia: organization for growth in a mature economy. Stanford: Stanford Univ. Press, 1960. Pp. xii, 274. \$5.75.

MYRDAL, G. Beyond the welfare state: economic planning and its international implications. New Haven: Yale Univ. Press, 1960. Pp. 287.

Business Fluctuations

BAYER, H., ED. Wirtschaftsprognose und Wirtschaftsgestaltung. Berlin: Duncker & Humblot, 1960. Pp. 318. DM 32.

HAZLITT, H. What you should know about inflation. Princeton, N.J.: Van Nostrand, 1960. Pp. vi, 152. \$3.50.

Area redevelopment legislation. Hearing before a subcommittee of the Senate Committee on Banking and Currency, 86th Cong., 2nd sess., August 18, 1960. Washington: Supt. Docs., 1960. Pp. 196.

Economic report of the President, transmitted to the Congress, January 18, 1961. Washington: Supt. Docs., 1961. Pp. 214.

Employment structure and business fluctuations. Econ. bull. no. 2. Tokyo: Econ. Research Inst., Econ. Planning Agency, Japanese Govt., 1959. Pp. 108.

Subsidy and subsidylike programs of the U.S. government. Materials prepared for the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. vi, 80. 25¢.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

BLOOMFIELD, A. I. Report and recommendations on the Korean Reconstruction Bank. Prepared for Internat. Cooperation Administration, U.S. Operations Mission/Korea and Korean Reconstruction Bank. Seoul: Korean Reconstruction Bank, 1960. Pp. 48.

CONFALONIERI, A. Il credito industriale. Milan: A. Giuffrè, 1960. Pp. viii, 298. L. 2500.

DACEY, W. M. Money under review. London: Hutchinson, 1960. Pp. 175. 25s.

DAVIES, S. G., ED. Central banking in South and East Asia. New York: Oxford Univ. Press; Hong Kong: Hong Kong Univ. Press, 1960. Pp. xi, 194. \$3.75.

FERRARI, A. Politica monetaria: evoluzione e aspetti odierni. Milan: A. Giuffrè, 1959. Pp. xv, 347. L. 2500.

MAURI, A. La struttura del sistema della riserva federale degli Stati Uniti d'America. Milan: A. Giuffrè, 1960. Pp. xxviii, 253. L. 1500.

McKINNEY, G. W. JR. The Federal Reserve discount window: administration in the fifth district. New Brunswick: Rutgers Univ. Press, 1960. Pp. xi, 157. \$4.50.

Aspectos monetarios de las economías latinoamericanas, 1959. México, D. F.: Centro de Estud. Monetarios Latinoamericanos, 1960. Pp. 328.

1960 Pacific Northwest metals and minerals conference—gold and money session. Portland: State of Oregon Dept. of Geology and Mineral Industries. Pp. iv, 57. \$1.50.

Public Finance; Fiscal Policy

- BROWNLEE, O. H. Estimated distribution of Minnesota taxes and public expenditure benefits. Univ. Minnesota stud. in econ. and bus. no. 21. Minneapolis: Univ. Minnesota Press, 1960. Pp. iv, 45. \$1.50.
- BUCHANAN, J. M. Fiscal theory and political economy: selected essays. Chapel Hill: Univ. of North Carolina Press, 1960. Pp. 197. \$5.
- BUSCEMA, S. AND D'AMATI, N., ED. Documenti e discussioni sulla formazione del sistema tributario italiano. Pts. 1 and 2. Storia della fin. pub. no. 11 and 12. Padua: CEDAM, 1961. Pp. viii, 404; vii, 545. L. 12.000.
- DISCHAMPS, J.-C. Comportements économiques et distorsions fiscales. Paris: Presses Univ. de France, 1960. Pp. viii, 408. NF 20.
- FREEMAN, R. A. Taxes for the schools. Financing the public schools, vol. 2. Washington: Inst. for Soc. Sci. Research, 1960. Pp. xxxvii, 441. \$5.
- KNIGHT, W. D., ED. Property taxation and the Wisconsin tax system. Wisconsin Bus. Research Council and Com. for Econ. Development. Wisconsin Commerce Reports, Sept., 1960. Madison: Univ. of Wisconsin, Bur. of Bus. Research and Service, 1960. Pp. 134. \$1.15.
- MARSHALL, A. H. Financial administration in local government. London: Allen & Unwin, for Royal Inst. of Pub. Admin., 1960. Pp. 392. 32 s.
- MORSELLI, E., ED. I tributi e l'amministrazione finanziaria nel mondo antico. Storia della fin. pub. no. 2. Padua: CEDAM, 1960. Pp. xxv, 340. L. 3500.
- NEUBAUER, W. Finanzreform. Ein Vorschlag zur Verhütung von Währungskrisen, zur Vereinfachung des Steuersystems und zur Rationalisierung der Finanzierungsmethoden. Wien: Springer, 1960. Pp. ix, 378. DM 6.65; paper cover, DM 5.70.
- SHOUP, C. S., HARRISS, C. L. AND VICKREY, W. S. The fiscal system of the Federal District of Venezuela: a report. Baltimore: Garamond, 1960. Pp. x, 162.
- SOULE, D. M. Comparative total tax loads of selected manufacturing corporations with alternative locations in Kentucky, Indiana, Ohio, and Tennessee. Lexington: Bur. of Bus. Research, Univ. of Kentucky, 1960. Pp. vi, 135.
- VIGNES, M. J.-B. revised by E. MORSELLI. Histoire des doctrines sur l'impôt en France—les causes de la Révolution Française considérées par rapport aux principes de l'imposition. Storia fin. pub. no. 5. Padua: CEDAM, 1960. Pp. x, 361. L. 4.000. Published first in 1909.
- WAGNER, A., GEFFKEN, F. AND OTHERS. Storia e storiografia del pensiero finanziario. Storia fin. pub. no. 12. Padua: CEDAM, 1960. Pp. viii, 371. L. 4.000.
A collection of essays by nine authors (previously published elsewhere over the period 1891-1958) on the history of public finance.
- WALLACE, R. A. Congressional control of federal spending. Detroit: Wayne State Univ. Press, 1960. Pub. x, 188. \$5.95.
- Problemi fiscali degli ammortamenti: Rassegna bibliografica. Rome: Assoc. Soc. Italiane per Azioni, 1960. Pp. 138.
- Small business tax revision act of 1958. Report of the House Committee on Ways and Means, 85th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 50.

International Economics

- DELWART, L. O. The future of Latin American exports to the United States: 1965 and 1970. Washington: Nat. Planning Assoc., 1960. Pp. 130.
- FERNS, H. S. Britain and Argentina in the nineteenth century. New York: Oxford Univ. Press, 1960. Pp. 517. \$10.10.
- KNAUTH, O. D. U.S. foreign policy in a changing world. Planning pamph. no. 110. Washington: Nat. Planning Assoc., 1960. Pp. iv, 76. \$1.50.
- LISKA, G. The new statecraft: foreign aid in American foreign policy. Chicago: Univ. of Chicago Press, 1960. Pp. 246.

- MÖLLER, H. *Internationale Wirtschaftsorganisationen*. Wiesbaden: Betriebswirtschaftlicher, 1960. Pp. 171. DM 8.70.
- MUELLER, R. AND STEEFEL, E. IN ASSOC. WITH DEBATIN, H. *Doing business in Germany: a legal manual*. Frankfurt: Fritz Knapp, 1960. Pp. 160. DM 14.20.
- REITSMA, A. J. *Trade protection in Australia*. Leiden: Stenfort Kroese, 1960. Pp. xi, 195. Fl. 15.
- REUBER, G. L. *Britain's export trade with Canada*. Canadian stud. in econ. no. 12. Toronto: Univ. of Toronto Press, 1960. Pp. xii, 147. \$3.50.
- SHONFIELD, A. *The attack on world poverty*. New York: Random House, 1960. Pp. xii, 269. \$5.
- SOUTHWORTH, C. AND BUCHANAN, W. W. *Changes in trade restrictions between Canada and the United States*. Washington: National Planning Assoc. (U.S.A.) and Private Planning Assoc. of Canada, 1960. Pp. x, 65. \$2.
- VAN DER BURG, P. J. *Het convertibiliteitsvraagstuk*. With a summary in English. The Hague: Martinus Nijhoff, 1960. Pp. 118. Fl. 10.
- Annual report of the Trade agreements program, July 1, 1960. Message from the President of the United States transmitting the fourth annual report. Washington: Supt. Docs., 1960. Pp. 116.
- BENELUX—analyse économique et fonctionnelle du budget de l'Etat des pays du Benelux 1958-1959-1960. In French and Dutch. Brussels: Secrétariat Général, Union Econ. Benelux, 1960. Fl. 7.50 or F 100.
- The coming tasks of Europe—introductory reports for the IVth International Conference of E.L.E.C., Brussels, Oct. 1960. Pub. no. 31. Brussels: European League Econ. Co-op., 1960. Pp. 118.
- The Commonwealth and Europe. London: Economist Intelligence Unit; New York: Warren S. Lockwood, distrib., 1960. Pp. 606. \$6.
- A detailed analysis of the future effects on the British Commonwealth to be anticipated from present moves towards freer trade within Europe. The book examines the main commodities exported by overseas Commonwealth countries, and deals with the probable effects on individual members of the Commonwealth of the European Economic Community and the European Free Trade Association.
- Economic assistance as a cooperative effort of the Free world. Washington: Dept. of State, 1960. Pp. 66.
- Foreign commerce study (U.S. trade and Common Market). Hearings before the Senate Committee on Interstate and Foreign Commerce, 86th Cong., 2nd sess., May 9 and 10, 1960. Washington: Supt. Docs., 1960. Pp. 294.
- International trade 1959. Geneva: The Contracting Parties to the General Agreement on Tariffs and Trade, 1960. Pp. 189. \$2.
- The Latin American common market. New York: UN Dept. of Econ. and Soc. Affairs, 1959. Pp. 146.
- United States-Latin American relations. Compilation of studies prepared under the direction of the Subcommittee on American Republics Affairs of the Senate Committee on Foreign Relations, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 828.
- Wool in Communist countries—a survey of the production of wool and other fibres, the textile industry and fibre consumption in the countries of the Sino-Soviet bloc. Wool econ. research report no. 1. Canberra: Bur. Agric. Econ., 1960. Pp. xii, 132.

Business Finance; Investment and Security Markets; Insurance

- BOGEN, J. I., AND KROOS, H. E. *Security credit—its economic role and regulation*. Englewood Cliffs: Prentice-Hall, 1960. Pp. xii, 194. \$4.95.
- COHEN, J. B. *Decade of decision*. New York: Inst. of Life Insurance with Health Insurance Inst., 1960. Pp. 55. Gratis.
- HICKMAN, W. B. WITH SIMPSON, E. T. *Statistical measures of corporate bond financing*

since 1900. Nat. Bur. Econ. Research, stud. in corporate bond fin. no. 3. Princeton: Princeton Univ. Press, 1960. Pp. xxx, 582. \$9.

MASSON, R. L., HUNT, P. AND ANTHONY, R. N. Cases in financial management. Homewood, Ill.: Irwin, 1960. Pp. x, 720. Text ed., \$9.

SIMON, P. Le financement des entreprises. Paris: Lib. Dalloz, 1960. Pp. 254. N.F. 11,90.

Business Organization; Managerial Economics; Marketing; Accounting

ACER, J. W. Business games: a simulation technique. Info. ser. no. 3. Iowa City: Bur. Labor & Management, College Bus. Admin., State Univ. Iowa, 1960. Pp. vi, 48. \$1.

BARNES, L. B. Organizational systems and engineering groups. A comparative study of two technical groups in industry. Boston: Grad. School of Bus. Admin., Harvard Univ., 1960. Pp. xv, 190. \$3.50.

BOCK, B. Mergers and markets—an economic analysis of case law. Stud. in bus. econ. no. 69. New York: Nat. Indus. Conf. Board, 1960. Pp. 143. \$2.50; \$12.50 to non-associates.

BOHM, H. H. AND WILLE, F. Direct costing und Programmplanung. Moderne Kalkulationsverfahren für gewinnoptimale Produktions- und Verkaufsprogramme. Munich: Moderne Industrie, 1960. Pp. 141.

CAHN, W. The story of Pitney-Bowes. New York: Harper, 1961. Pp. x, 262. \$4.50.

DIXON, B. Price discrimination and marketing management. Mich. Bus. Stud. 15 (1). Ann Arbor: Bur. Bus. Research, School Bus. Admin., Univ. Michigan, 1960. Pp. 124. \$5.

FLAGLE, C. D. AND OTHERS, ed. Operations research and systems engineering. Baltimore: Johns Hopkins Press, 1960. Pp. 889.

FORSYTHE, E. J. AND PILCHER, P. C., ed. Management science: a new organizational dimension. Proc. of conference sponsored by the Inst. of Lab. and Indus. Rel., Univ. of Michigan—Wayne State Univ. & Inst. of Management Sci. Apr. 28, 1959. Ann Arbor: Inst. of Lab. and Indus. Relations, 1959. Pp. 117.

HOLDREN, B. R. The structure of a retail market and the market behavior of retail units. Englewood Cliffs: Prentice-Hall, 1960. Pp. xii, 203. \$4.50; Educational rate \$1.

HOLMES, P. M. Marketing research: principles and readings. Cincinnati: South-Western, 1960. Pp. x, 646. \$7.50.

HOLT, C. C., MODIGLIANI, F., MUTH, J. F. AND SIMON, H. A. Planning production, inventories, and work force. Englewood Cliffs: Prentice-Hall, 1960. Pp. xii, 419. \$7.50.

HURLEY, M. E. Business administration. 2nd ed. Englewood Cliffs: Prentice-Hall, 1960. Pp. xxii, 489. \$7.95.

JUNCKERSTORFF, H. K. Modern management of enterprises. The Hague: Martinus Nijhoff, 1960. Pp. vi, 81.

MALCOLM, D. G. AND ROWE, A. J., ed. Management control systems—the proceedings of a symposium held at System Development Corporation, Santa Monica, California, July 29-31, 1959. New York: Wiley, 1960. Pp. xvii, 375. \$7.25.

MORELL, R. W. Managerial decision-making. Milwaukee: Bruce Pub. Co., 1960. Pp. xiv, 201. \$4.50.

RAY, D. D. Accounting and business fluctuations. Gainesville: Univ. of Florida Press, 1960. Pp. xii, 184. \$6.50.

SEGAL, M. The labor market and plant location. Hanover: Amos Tuck School of Bus. Admin., Dartmouth College, 1960. Pp. 14.

SIMON, H. A. The new science of management decision. The Ford distinguished lectures, vol. 3. New York: Harper, 1960. Pp. xii, 50. \$2.50.

SUONIEMI, R. AND KETTUNEN, P. Sekatavara- ja tekstiilialan yksityisten vähittäiskauppaliikkeiden kannattavuus v. 1959. (The returns of general and textile merchandise retail trade in 1959. Summary.) Liiketaloustieteellisen tutkimuslaitoksen ja kauppatieteellisen yhdistyksen tutkielmia no. 35. Helsinki: Liiketaloustieteellinen Tutkimuslaitos, 1960. Pp. 47.

TSE, J. Y. D. Profit planning through volume-cost analysis. New York: Macmillan, 1960. Pp. x, 240. \$7.95.

VILLERS, R. Dynamic management in industry. Englewood Cliffs: Prentice-Hall, 1960. Pp. xi, 516. \$7.50.

Industrial Organization; Government and Business; Industry Studies

FOGEL, R. W. The Union Pacific Railroad—a case in premature enterprise. Baltimore: Johns Hopkins Press, 1960. Pp. ix, 129. \$3.50.

GILLE, B. Les forges françaises en 1772. Paris: S.E.V.P.E.N., 1960. Pp. xii, 206.

GUENAUT, P. H. AND JACKSON, J. M. The control of monopoly in the United Kingdom. New York: Longmans, Green, 1960. Pp. ix, 197. \$6.50.

LEVIN, H. J. Broadcast regulation and joint ownership of media. New York: New York Univ. Press, 1960. Pp. xviii, 219. \$4.50.

MARTIN, D. D. Mergers and the Clayton Act. Berkeley and Los Angeles: Univ. of California Press, 1959. Pp. xii, 351. \$6.

NEALE, A. D. The antitrust laws of the United States of America A study of competition enforced by law. Foreword by A. Fortas. Nat. Inst. of Econ. and Social Research, econ. and social stud. no. 19. New York: Cambridge Univ. Press, 1960. Pp. xiii, 516. \$7.50.

PAULSON, E. W. Transport and communication problems in Norway. Inst. Econ., Norwegian School Econ. & Bus. Admin. papers no. 11. Bergen: Inst. Econ., Norwegian School Econ. & Bus. Admin., 1958. Pp. 10.

REDFORD, E. S. The general passenger fare investigation. ICP pub. no. 56. University, Alabama: Univ. of Alabama Press for Inter-University Case Program, 1960. Pp. 56. \$1.50.

SCHURR, S. H. AND NETSHCART, B. C. WITH OTHERS. Energy in the American economy, 1850-1975—an economic study of its history and prospects. Baltimore: Johns Hopkins Press for Resources for the Future, Inc., 1960. Pp. xxii, 774. \$12.50.

Administered prices. Administered prices in the drug industry. Pt. 20, Oral anti-diabetic drugs. Pt. 21, General; generic and brand names. Pt. 22, The Food and Drug Administration: Dr. Henry Welch. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 86th Cong., 2nd sess., Apr. 26-28 and May 3-4, May 10-13, May 17-18, June 1-3 and 6, 1960. Washington: Supt. Docs., 1960. Pp. 482; 394; 323.

Appraisal of steel demand. Report of the National Council of Applied Economic Research. New Delhi: Council of Scientific & Indus. Research, 1960. Pp. xi, 138. Rs 10.

Aprovechamiento de los barcos de cabotaje Chilenos. Pub. no. 30. Santiago, Chile: Inst. Econ. Univ. Chile, 1960. Pp. vii, 170.

Economic aspects of military procurement and supply. Report of the Subcommittee on Defense Procurement to the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 125. 35¢

Government patent practices. Hearings before the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 86th Cong., 2nd sess., May 17-18, 1960. Washington: Supt. Docs., 1960. Pp. 256.

Proposed passenger train act of 1960. Hearings before the Surface Transportation Subcommittee, 86th Cong., 2nd sess., Mar. 24-25, Apr. 1, 25, June 6-28, 1960. Washington: Supt. Docs., 1960. Pp. 413.

Rasvitie gasovoy promyshlennosti SSSR—materialy mezvuzovskoi nauchnoy konferentsii po voprosam gasovoy promyshlennosti. (The development of the gas industry in the USSR—materials of an inter-universities conference on questions of the gas industry.) Moscow: 1960. Pp. 406.

Sale and transmission of power (Bureau of Reclamation, Central Valley Project, California). Hearings before a subcommittee of the House Committee on Government Operations, 86th Cong., 2nd sess., Mar. 25-26, 1960. Washington: Supt. Docs., 1960. Pp. 338.

Seventy-third annual report on transport statistics in the United States for the year ended December 31, 1959. Washington: Bur. Transport Econ. and Stat., Interstate Commerce Commission, 1960. Pp. 617.

Transportation diversification. Hearings before a subcommittee of the House Committee on Interstate and Foreign Commerce, 86th Cong., 2nd sess., Feb. 2-5, Apr. 12-14, 1960. Washington: Supt. Docs., 1960. Pp. 414.

Land Economics; Agricultural Economics; Economic Geography; Housing

CLARK, C. The economics of irrigation in dry climates. Oxford: Univ. of Oxford Inst. Research Agric. Econ., 1960. Pp. 31. 5s.

FABRE, F.-C. La politique céréalière en Europe au seuil de l'unification—tableau économique et réglementaire. Aspects Européens, ser. B, no. 3. Leyde: A. W. Sythoff, 1960. Pp. 231. FL 15,90.

FIREY, W. Man, mind and land: a theory of resource use. Glencoe, Ill.: Free Press, 1960. Pp. 256. \$6.

FRITZ, W. G. The future of industrial raw materials in North America. Washington: Nat. Planning Assoc. (U.S.A.) and Private Planning Assoc. of Canada, 1960. Pp. xi, 76. \$2.

GATES, P. W. The farmer's age: agriculture, 1815-1860. Econ. history of U.S., vol. 3. New York: Holt, Rinehart and Winston, 1960. Pp. xviii, 460. \$6.

HIRSHLEIFER, J., DE HAVEN, J. C. AND MILLIMAN, J. W. Water supply: economics, technology, and policy. Chicago: Univ. of Chicago Press, 1960. Pp. xi, 378. \$7.50.

KERR, R. S. Land, wood, and water. Ed. by M. Stephenson and T. Coffin. New York: Fleet Pub. Corp., 1960. Pp. 380.

LAMARTINE YATES, P. Food, land and manpower in Western Europe. London: Macmillan, 1960. Pp. xiii, 294. 35s.

LEROY, L. Le ruralisme: comment réaliser l'aménagement des campagnes. Paris: Éd. Ouvrières, 1960. Pp. 136. NF 9.30.

MCENTIRE, D. Residence and race. Final and comprehensive report to the Commission on Race and Housing. Berkeley and Los Angeles: Univ. of California Press, 1960. Pp. xxi, 409. \$6.

MEIJ, J. L., ed. Mechanization in agriculture. Chicago: Quadrangle, 1960. Pp. xi, 379.

MUKHIN, A. I. Ekonomicheskaya geografija Federativnoy Respubliki Germanii. (Economic geography of the German Federated Republic.) Moscow: 1960. Pp. 259.

MURRAY, W. G. AND NELSON, A. G. Agricultural finance. 4th ed. Ames: Iowa State Univ. Press, 1960. Pp. x, 486. \$6.50.

NARAYAN, B. K. Agricultural development in Hyderabad state 1900-1956: a study in economic history. Secunderabad, India: Keshav Prakashan, 1960. Pp. xvi, 115. Rs 5.

POLLAK, F. S., ed. Resources development: frontiers for research. Western Resources Conf., Univ. of Colorado, 1959. Boulder: Univ. of Colorado Press, 1960. Pp. 333.

PRESTON, L. E. Exploration for non-ferrous metals—an economic analysis. Washington: Resources for the Future, 1960. Pp. x, 198. \$2.

THOMPSON, S. H. Alaska fishery and fur-seal industries, 1956. Fish and Wildlife Service Stat. digest no. 45. Washington: Supt. Docs., 1960. Pp. 88.

TOLLEY, G. S. AND RIGGS, F. E., ed. Economics of watershed planning. Ames: Iowa State Univ. Press, 1961. Pp. ix, 339. \$3.95.

WAGNER, P. L. The human use of the Earth. Glencoe, Ill.: Free Press, 1960. Pp. xv, 270. \$6.

WHETHAM, E. H. The economic background to agricultural policy. New York: Cambridge Univ. Press, 1960. Pp. xii, 147. \$4.50.

WITMER, T. R. AND OTHERS. Federal water rights legislation, three papers. Prepared for the Committee on Interior and Insular Affairs, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 60.

- Economic policies for agriculture in the 1960's—implications of four selected alternatives. Materials prepared for the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. viii, 82. 25¢.
- Energy resources and government. Materials submitted to the Subcommittee on Automation and Energy Resources by Federal and State Regulatory and Developmental Agencies, Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. vi, 603. \$2.
- Food for America's future. Twelve outstanding authorities discuss the country's ability to feed its multiplying millions. New York: McGraw-Hill for Ethyl Corp., 1960. Pp. xii, 167. \$3.95.
- Futures trading seminar history and development. Vol. 1. Madison, Wis.: Mimir, 1960. Pp. xii, 283. Principal papers by: H. H. Bakken, R. W. Gray, T. A. Hieronymus, A. B. Paul.
- Problemas de urbanização na América Latina: Fontes bibliográficas. Pub. no. 2. Rio de Janeiro: Centro Latino-Americano de Investigaciones en Ciencias Sociales, 1960. Pp. 123.
- Resources for the Future—annual report for the year ending September 30, 1960. Washington: Resources for the Future, 1960. Pp. 99.
Includes "Natural Resources in the 1960's," by J. L. Fisher, president of RFF and three special reports: "A Better Gauge of the Water Outlook," by N. Wollman; "The Outlook for Nuclear Energy," by S. H. Schurr; "Measuring Regional Growth," by H. S. Perloff and others.
- Selskoye khoziaistvo SSSR: stat. sbornik. (Agriculture of the USSR: a statistical handbook.) Moscow: 1960. Pp. 666.
- La tributación agrícola en Chile, 1940-1958: algunas implicaciones económicas del sistema tributario agrícola Chileno. Inst. Econ. pub. no. 27. Santiago: Inst. Econ. Univ. Chile, 1960. Pp. vi, 213.
- Why labour leaves the land—a comparative study of the movement of labour out of agriculture. Geneva: Internat. Labour Office, 1960. Pp. viii, 229. \$2.25.
- Yearbook of fishery statistics. Vol. 10, International trade, 1958-59. Vol. 11, Production. In English, French and Spanish. Rome: Food and Agric. Organization United Nations, 1960. Pp. xvi, 351; xxix, 357. \$3.50, \$4.

Labor Economics

- BELING, W. A. Pan-Arabism and labor. Harvard Middle Eastern monogr. no. 4. Cambridge: Harvard Univ. Press for Center for Middle Eastern Studies, Harvard Univ., 1960. Pp. x, 127.
- BOYD, W. L., BRADY, J. A. AND OTHERS. The Iowa law of workmen's compensation. Research ser. no. 22. Iowa City: Bur. Labor and Management, College of Bus. Admin., State Univ. of Iowa, 1960. Pp. 150.
- BRY, G. ASSISTED BY BOSCHAN, C. Wages in Germany, 1871-1945. Nat. Bur. of Econ. Research, gen. ser., no. 68. Princeton: Princeton Univ. Press, 1960. Pp. xxvi, 486. \$10.
- COX, A. Law and the national labor policy. Monogr. ser. 5. Los Angeles: Inst. Indus. Rel., Univ. of California. Pp. 111.
- CROOK, W. H. Communism and the general strike. Hamden, Conn.: Shoe String Press, 1960. Pp. xii, 483. \$8.75.
- DEVINO, W. S. Exhaustion of unemployment benefits during a recession: a case study. East Lansing: Lab. and Indus. Rel. Center, Michigan State Univ., 1960. Pp. ix, 78. \$1.50.
- ELKAN, W. Migrants and proletarians—urban labour in the economic development of Uganda. New York: Oxford Univ. Press for East African Inst. Soc. Research, 1960. Pp. ix, 149. \$3.40.
- FARMER, G. Strikes, picketing and secondary boycotts under the Landrum-Griffin amendments. Research monogr., 19. New York: Indus. Rel. Counsel, 1960. Pp. 43. \$1.75.

- FONSECA, A. J. Wage determination and organised labour in India. (A doctoral dissertation). Poona: Indian Social Institute, distrib., 1960. Pp. 153. \$3.
- GUILLEBAUD, C. W. Wage determination and wages policy. An economic monograph. Welwyn: Nisbet, 1960. Pp. 31. 2s, 6d.
- JENKS, C. W. Human rights and international labour standards. London: Stevens, for London Inst. World Affairs, 1960. Pp. xvi, 160. 25s.
- KERR, C., DUNLOP, J. T., HARRISON, F. H. AND MYERS, C. A. Industrialism and industrial man: the problem of labor and management in economic growth. Cambridge: Harvard Univ. Press, 1960. Pp. 331. \$6.
- KNOELLINGER, C. E. Labor in Finland. Cambridge: Harvard Univ. Press, 1960. Pp. xii, 300. \$6.
- KUCZYNSKI, J. Die Geschichte der Lage der Arbeiter unter dem Kapitalismus. Vol. 8: Hardenbergs Umfrage über die Lage der Kinder in den Fabriken und andere Dokumente aus der Frühgeschichte der Lage der Arbeiter, by R. Hoppe, J. Kuczynski, H. Waldmann. Berlin: Akademie-Verlag, 1960. Pp. viii, 206. DM 11.
- LULOFFS, J. G. De Amerikaanse arbeidsmarkt: een onderzoek naar arbeidsmobiliteit in de Verenigde Staten. (English summary). Meppel: J. A. Boom & Zoon, 1960. Pp. 264.
- MACDONALD, D. F. The state and the trade unions. New York: St. Martins; London: Macmillan, 1960. Pp. vii, 199. \$4.50.
A short and interestingly-written history of the trade union movement in the United Kingdom with particular attention paid to legislation and governmental controls.
- POLLITT, D. H. AND LEVINE, S. M. The migrant farm worker in America. Background data on the migrant worker situation in the United States today, prepared for the Subcommittee on Migratory Labor of the Senate Committee on Labor and Public Welfare, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 79.
- REES, A. New measures of wage-earner compensation in manufacturing, 1914-57. Occas. paper no. 75. New York: Nat. Bur. of Econ. Research, 1960. Pp. ix, 26. 75¢.
- SLICHTER, S. H., HEALY, J. J. AND LIVERNASH, E. R. The impact of collective bargaining on management. Washington: Brookings Inst., 1960. Pp. xv, 982. \$8.75.
- SOIN, M. Y. The reproduction of labor power in the USSR and the balance of labor. New York: Joint Pub. Research Service, 1960. Pp. 391.
- STOLITZ, G. Arbeidstidsproblemer. En økonomisk analyse. Oslo: Oslo Univ. Press, 1958. Pp. 116.
- TRONCOSO, M. P. AND BURNETT, B. G. The rise of the Latin American labor movement. New York: Bookman, 1960. Pp. 179. \$5.
- VAID, K. N., ED. Labour-management relations in India: a symposium. Stud. in social work, no. 11. Delhi: Delhi School of Social Work, 1960. Pp. 118. \$1.50.
- WALKER, K. F. Research needs in industrial relations. Nedlands: Univ. Western Australia Press, 1960. Pp. 110. 5s.
- YPSILANTIS, J. N. The labor force of Czechoslovakia. U.S. Bur. of Census, Internat. population stat. rept., ser. P-90, no. 13. Washington: Supt. Docs., 1960. Pp. ii, 30. 25¢.
- The American workers' fact book, 1960. Dept. of Labor. Washington: Supt. Docs., 1960. Pp. 354.
- Analysis of work stoppages, 1959. Bur. Lab. Stat. bull. 1278. Washington: Supt. Docs., 1960. Pp. 60.
- Arbitration—a new direction? A discussion of the issues involved in the Supreme Court decision of June 20, 1960. IRM no. 136. New York: Indus. Rel. Counselors, 1960. Pp. 32. \$1.50.
- Area guide to industry employment statistics: industry by area, 1939-58. Washington: Bur. Lab. Stat., 1960. Pp. 90.
- Economic forces in the U.S.A. in facts and figures: the United States, its people, its

- labor force, and its economy. 6th Ed. Prepared by Dept. of Labor, Bur. Lab. Stat. in coop. with Internat. Coop. Admin. Washington: Supt. Docs., 1960. Pp. 253.
- Guide to area employment statistics: employment, hours and earnings, area definitions. Washington: Bur. Lab. Stat., 1960. Pp. 227.
- Ocupación y desocupación—Gran Santiago Valparaiso-Viña del Mar, Junio de 1960. Inst. Econ., pub. no. 28. Santiago: Inst. Econ. Univ. Chile, 1960. Pp. vi, 38.
- Proceedings of the tenth annual labor-management conference Apr. 22-23, 1960. Arranged in cooperation with The College of Commerce, The College of Law, The Department of Political Science. Morgantown: Inst. Indus. Rel., West Virginia Univ., 1960. Pp. iv, 105.
- Reports of the Inter-American meeting of experts on industrial and labor relations, Bogota, Colombia, May 9-15, 1960. Report and bibliography. Washington: Inter-American Econ. and Social Council, Pan American Union, 1960. Pp. 14, 79.
- 1959 Statistical supplement—*Monthly Labor Review*. Washington: Supt. Docs., 1960. Pp. 79. 60¢.
- "This volume is the first annual statistical supplement to the Monthly Labor Review. Most of the statistics presented here are more detailed than can be published regularly in the Current Labor Statistics section of the Review; other series have never been included in that section" (from the preface).
- Structure of unemployment in areas of substantial labor surplus. Materials prepared by the Bur. Lab. Stat. in connection with the study Employment, Growth, and Price Levels, for the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 34.
- El valor de la educación y de la investigación académica en las relaciones industriales y del trabajo. Proceedings of Reunión Interamericana de Expertos en Relaciones Industriales y del Trabajo, Colombia, May 9-14, 1960. Washington: Pan American Union, 1960. Pp. 108. \$1.

Population; Welfare Programs; Consumer Economics

- BORNET, V. D. Welfare in America. Norman: Univ. Oklahoma Press, 1960. Pp. xi, 319. \$4.95.
- BRITT, S. H. The spenders. New York: McGraw-Hill, 1960. Pp. xiii, 293. \$4.95.
- CHEN, K. I. World population growth and living standards. New York: Bookman, 1960. Pp. 93. \$4.
- GOLDBERG, D., FELDT, A. AND SMIT, J. W. Estimates of population change in Michigan 1950-1960. Michigan population stud. no. 1. Ann Arbor: Dept. Soc., Inst. Pub. Admin., Univ. of Michigan, 1960. Pp. 49. \$1.
- HABER, W AND COHEN, W. J. Social security: programs, problems, and policies. Homewood: Richard D. Irwin, 1960. Pp. xv, 606. \$8.75.
- HARRIS, S. E., ED. Higher education in the United States: the economic problems. Cambridge: Harvard Univ. Press, 1960. Pp. 252. \$5.50. Also published as a special suppl. *Rev. Econ. Stat.*, Aug. 1960.
- PATTERSON, H. W. Legal protection of private pension expectations. Homewood, Ill.: Richard D. Irwin for Pension Research Council, Wharton School of Finance and Commerce, Univ. of Pennsylvania, 1960. Pp. xxiii, 286. \$6.75.
- SALERA, V. U.S. immigration policy and world population problems. Washington: American Enterprise Association, 1960. Pp. v, 37. \$1.
- SCHNEIDER, T., ED. The expulsion of the German population from Czechoslovakia: a selection and translation from *Dokumentation der Vertreibung der Deutschen aus Ost-Mittleuropa*. Vol. IV (1) and (2). Bonn: Fed. Ministry for Expellees, Refugees and War Victims, 1960. Pp. xv, 579.
- SPIEGELMAN, M. Ensuing medical care for the aged. Homewood, Ill.: Irwin, for Pension Research Council, Wharton School of Finance, Univ. of Pennsylvania, 1960. Pp. 280.

- UDELL, G. G., COMP. Laws relating to social security and unemployment compensation. Washington: Supt. Docs., 1960. Pp. 483.
- Demographic and economic change in developed countries: a conference of the Universities-National Bureau Committee for Economic Research. Nat. Bur. Econ. Research Spec. conf. ser. no. 11. Princeton: Princeton Univ. Press, 1960. Pp. xi, 536. \$12.
- Estratificación y movilidad social en el Uruguay: fuentes bibliograficas (1880-1958). Pub. no. 5. Rio de Janeiro: Centro Latino-Americano de Investigaciones en Ciencias Sociales, 1959. Pp. 60.
- Estratificación y movilidad social en Argentina: fuentes bibliograficas (1880-1958). Pub. no. 6. Rio de Janeiro: Centro Latino-Americano de Investigaciones en Ciencias Sociales, 1959. Pp. 46.
- Hospital care in Canada—recent trends and developments. Health care ser. mem. no. 12. Ottawa: Research and Stat. Div., Dept. Nat. Health Welfare, 1960. Pp. x, 102, 34 tables.
- The post-enumeration survey: 1950—an evaluation study of the 1950 censuses of population and housing. Tech. paper no. 4. Washington: Bureau of the Census, 1960. Pp. vi, 93. \$1.

Related Disciplines

- ALLEN, H. C. The Anglo-American predicament: the British Commonwealth, the United States and European unity. New York: St. Martin's Press, 1960. Pp. xiv, 241. \$6.75.
- BASSON, A. H. AND O'CONNER, D. J. Introduction to symbolic logic. Glencoe, Ill.: Free Press, 1960. Pp. viii, 175. \$3.
- BERELSON, B. Graduate education in the United States. New York: McGraw-Hill, 1960. Pp. vi, 346. \$6.95.
- BLACK, C. E. The transformation of Russian society. Cambridge: Harvard Univ. Press, 1960. Pp. 695. \$9.75.
- BLOCK, W. J. The separation of the farm bureau and the extension service: political issue in a federal system. Illinois stud. in soc. sci., vol. 47. Urbana: Univ. of Illinois Press, 1960. Pp. 304. \$5; paper \$4.
- CORSON, J. J. Governance of colleges and universities. New York: McGraw-Hill, 1960. Pp. vi, 209. \$5.50.
- COWEE, G. A. The ups and downs of common stocks—the book every investor should own. New York: Vantage Press, 1960. Pp. 120. \$3.
- DOSSICK, J. J. Doctoral research on Russia and the Soviet Union. New York: New York Univ. Press, 1960. Pp. 248. \$6.
- FOY, F. C., PAGET, R. M. AND OTHERS. Views on business education. Chapel Hill: School Bus. Admin., Univ. of North Carolina for the Am. Assoc. of Collegiate Schools of Bus., 1960. Pp. 85.
- KAPLAN, L., COMP. A bibliography of American autobiographies. Madison: Univ. of Wisconsin Press, 1961. Pp. xii, 372. \$6.
- LEHMANN, W. C. John Millar of Glasgow 1735-1801—his life and thought and his contributions to sociological analysis. New York: Cambridge Univ. Press, 1960. Pp. xvi, 430. \$10.
- MARCSON, S. The scientist in American industry: some organizational determinants in manpower utilization. Princeton: Indus. Rel. Sec., Dept. of Econ., Princeton Univ., 1960. Pp. ix, 158. \$3.
- NIDDITCH, P. H. Elementary logic of science and mathematics. Glencoe, Ill.: Free Press, 1960. Pp. vii, 371. \$4.
- . Introductory formal logic of mathematics. Glencoe, Ill.: Free Press, 1960. Pp. vii, 188. \$3.
- PARMELEE, M. The history of modern culture. New York: Philosophical Library, 1960. Pp. 1295. \$10.

- RUDY, W. The evolving liberal arts curriculum—a historical review of basic themes. New York: Bur. Publications Teachers College Columbia Univ., for Inst. Higher Education, 1960. Pp. iv, 135. \$3.
- RUTTENBERG, H. J. Self-developing America. New York: Harper, 1960. Pp. xiii, 254. \$4.50.
- SCHELLING, T. C. The role of theory in the study of conflict. Research memo. RM-2515. Santa Monica: RAND, 1960. Pp. 48.
- SCHOECK, H. AND WIGGINS, J. W., ED. Scientism and values. New Jersey: Van Nostrand, 1960. Pp. xvi, 270. \$6.50.
- SJOBERG, G. The preindustrial city past and present. Glencoe, Ill.: Free Press, 1960. Pp. xi, 353. \$6.75.
- SPATES, T. G. Human values where people work. New York: Harper, 1960. Pp. x, 246. \$4.50.
- SUPPES, P. AND ATKINSON, R. C. Markov learning models for multiperson interactions. Stanford: Stanford Univ. Press, 1960. Pp. xii, 296. \$8.25.
- "The common part of three disciplines, all actively developed within the last two decades, forms the subject matter of this book. One of these disciplines is the study by social psychologists of individuals interacting in small groups; the second is the study of learning as a stochastic process; and the third is the study of games from the standpoint of a mathematical theory of strategy. Our primary concern is with the application of learning theory to small group experiments that closely resemble game situations" (from the introductory chapter).
- Administration of teaching in social sciences in the U.S.S.R.: syllabi for three required courses. Ann Arbor: Univ. of Michigan Press, 1960. Pp. x, 136.

PERIODICALS

General Economics; Methodology

- HARRIS, C. L. La diffusion de la connaissance économique. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 605-16.
- JOHNSON, H. G. The political economy of opulence. *Can. Jour. Econ. Pol. Sci.*, Nov. 1960, pp. 552-64.
- KRÖLL, M. An der Schwelle des Überflusses. *Schmollers Jahrb.*, 1960, 80 (5), pp. 1-21.
- SHUBIK, M. Bibliography on simulation, gaming, artificial intelligence and allied topics. *Jour. Am. Stat. Assoc.*, Dec. 1960, pp. 736-51.
- SURANYI-UNGER, T. Scope and problems of economic philosophy. *Zeitschr. f. die ges. Staatswiss.*, 1960, 116 (3), pp. 385-410.
- SVENDSEN, K. E. A guide to translations of economic literature from the Soviet Union and Eastern Europe. *Kyklos*, 1960, 13 (4), pp. 559-84.
- Bibliographie der Sozialwissenschaften—1958. *Jahrb. Sozialwissensch.*, 1960, 11 (2), pp. 1-360.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AMOROSO, L. Modelli economici e modelli statistici. *Giorn. d. Econ.*, May-June 1960, pp. 325-43.
- ANTHONY, R. N. The trouble with profit maximization. *Harvard Bus. Rev.*, Nov.-Dec. 1960, pp. 126-34.
- ARROW, K. J. AND HURWICZ, L. Some remarks on the equilibria of economic systems. *Econometrica*, July 1960, pp. 640-46.
- BALJIT SINGH, D. Compulsory savings. *Indian Econ. Jour.*, Apr. 1960, pp. 378-94.
- BECKER, A. S. Comparisons of United States and USSR national output: some rules of the game. *World Pol.*, Oct. 1960, pp. 99-111.
- BELL, C. S. On the elasticity of demand at retail. *Am. Jour. Econ. Soc.*, Oct. 1960, pp. 63-72.
- BERNARDELLI, H. The missing key. *Econ. Record*, Aug. 1960, pp. 336-50.
- BERNHAEUER, E. Ein Versuch zur modelltheoretischen Interpretation der Schumpeterschen Konjunkturtheorie. *Zeitschr. f. die ges. Staatswiss.*, 1960, 116 (3), pp. 431-68.
- BISHOP, R. L. Duopoly: collusion or warfare? *Am. Econ. Rev.*, Dec. 1960, pp. 933-61.
- BLAUG, M. Technical change and Marxian economics. *Kyklos*, 1960, 13 (4), pp. 495-512.
- BOMBACH, G. Kreislauftheorie und volkswirtschaftliche Gesamtrechnung. *Jahrb. Sozialwissensch.*, 1960, 11 (2), pp. 217-42.
- CANDLER, W. A "short-cut" method for the complete solution of game theory and feed-mix problems. *Econometrica*, July 1960, pp. 618-34.
- CARNEY, D. Consumer's surplus, elasticity of demand and marginal utility: a re-examination. *Indian Econ. Jour.*, Apr. 1960, pp. 363-77.
- CARVER, T. N. A conservative's ideas on economic reform. *Quart. Jour. Econ.*, Nov. 1960, pp. 536-42.
- DAVIS, R. G. AND MELLON, W. G. On the magnification of derived demand. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 4-18.
- DEBREU, G. Une économie de l'incertain. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 111-16.

- DE CANI, J. S. Ricerca operativa e microeconomica applicata: un esempio. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1960, pp. 843-56.
- DELEECK, H. Verticale inkomenshervrelding en loongrensregeling in het stelsel der kinderbijslagen. *Tijdschrift v. Econ.*, 1960, 5 (3), pp. 253-300.
- DI BENEDETTO, S. Tendenze e problemi della formazione del risparmio. *Rassegna Econ.*, May-Aug. 1960, pp. 222-39.
- DIETERLEN, P. La complémentarité antagonique, comme instrument d'analyse économique. *Cahiers l'Inst. de Sci. Econ. Appliquée*, July 1960, pp. 5-53.
- DOBB, M. The revival of theoretical discussion among Soviet economists. *Sci. and Soc.*, Fall 1960, pp. 289-311.
- DREZE, J.-H. Le paradoxe de l'information. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 71-80.
- . Les probabilités subjectives ont-elles une signification objective? (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 55-70.
- FEI, J. C. H. The study of the credit system by the method of linear graph. *Rev. Econ. Stat.*, Nov. 1960, pp. 417-28.
- FERRERI, C. Sull'instabilità del modello dinamico di Leontief. *Annali Fac. di Econ. e Com.*, 1960, 14 (1), pp. 1-50.
- FETTER, F. W. The economic articles in "Blackwood's Edinburgh Magazine," and their authors, 1817-1853, II. *Scot. Jour. Pol. Econ.*, Nov. 1960, pp. 213-31.
- FRENCH, B. C. Some considerations in estimating assembly cost functions for agricultural processing operations. *Jour. Farm Econ.*, Nov. 1960, pp. 767-78.
- GALE, D. A note on revealed preference. *Economica*, Nov. 1960, pp. 348-54.
- GHOSH, A. Inflation in a planned multi-sector growth process. *Arthaniti*, May 1960, pp. 152-62.
- . A note on Leontief models with non-homogeneous production functions. *Metroeconomica*, Apr. 1960, pp. 14-20.
- GOLDMAN, M. I. Product differentiation and advertising: some lessons from Soviet experience. *Jour. Pol. Econ.*, Aug. 1960, pp. 346-57.
- GOMORY, R. E. AND BAUMOL, W. J. Integer programming and pricing. *Econometrica*, July 1960, pp. 521-50.
- GOTTLIEB, M. The multiplier (secondary wave). *Econ. Internaz.*, Aug. 1960, pp. 419-48.
- HANCOCK, K. Unemployment and the economists in the 1920's. *Economica*, Nov. 1960, pp. 305-21.
- HARLOW, A. A. The hog cycle and the cobweb theorem. *Jour. Farm Econ.*, Nov. 1960, pp. 842-53.
- HEERTJE, A. On the theory of oligopoly. *Econ. Internaz.*, Aug. 1960, pp. 449-69.
- HELELÄ, T. Funktionaalisesta tulonjakoteoriasta. (With English summary.) *Kansantaloudellinen Aikakauskirja*, 1960, 3, pp. 282-303.
- HICKS, J. R. Thoughts on the theory of capital—the Corfu conference. *Oxford Econ. Papers*, June 1960, pp. 123-32.
- HONJO, E. The development of study on the history of Japanese economic thought. *Kyoto Univ. Econ. Rev.*, Oct. 1959, pp. 1-16.
- JASAY, A. E. Inflazione, distribuzione dei redditi e instabilità. *Studi Econ.*, July-Oct. 1960, pp. 333-44.
- JOHANSEN, L. Investeringsrate og vekstrate. *Ekon. Samfundets Tids.*, Aug. 1960, pp. 169-79.
- JØRGENSEN, E. Husholdningsbudgetundersøgelser af opsparingsforhold. *Nationaløkon. Tids.*, 1960, 98 (3-4), pp. 152-68.
- KENNEDY, C. A static interpretation of some recent theories of growth and distribution. *Oxford Econ. Papers*, June 1960, pp. 193-201.

- KUUSKINEN, A. Jakaantumisteorian yhteyksistä kasvun analyysiin. (With English summary.) Kansantaloudellinen Aikakauskirja, 1960, 3, pp. 245-81.
- KRAVIS, I. B. International differences in the distribution of income. *Rev. Econ. Stat.*, Nov. 1960, pp. 408-16.
- LANSING, J. B., LYDALL, H. An Anglo-American comparison of personal saving. *Bull. Oxford Univ. Inst. Stat.*, Aug. 1960, pp. 225-58.
- LESOURNE, J. Essai de classement des applications de la théorie. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 117-26.
- LETICHE, J. M. Adam Smith and David Ricardo on economic growth. *Panjab Univ. Econ.*, Jan. 1960, pp. 7-35.
- MALINVAUD, E. La décision dans une perspective temporelle. L'avenir aléatoire. Les décisions séquentielles. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 81-110.
- MARCHAL, J. AND LECAILLON, J. Discussion du schéma marxiste sur les effets de l'accumulation du capital et notamment la tendance du salaire réel à revenir au minimum. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1960, pp. 901-22.
- McKENZIE, L. W. Stability of equilibrium and the value of positive excess demand. *Econometrica*, July 1960, pp. 606-17.
- MEEK, R. L. The interpretation of the "tableau économique." *Economica*, Nov. 1960, pp. 322-47.
- MILLER, H. P. Annual and lifetime income in relation to education: 1939-1959. *Am. Econ. Rev.*, Dec. 1960, pp. 962-86.
- MORLAT, G. Un article de J. Milnor: Les jeux contre la nature. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 27-36.
- . L'incertitude et les probabilités. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 37-54.
- MOSES, L. H. A general equilibrium model of production, interregional trade, and location of industry. *Rev. Econ. Stat.*, Nov. 1960, pp. 373-97.
- NEWMAN, P. The erosion of Marshall's theory of value. *Quart. Jour. Econ.*, Nov. 1960, pp. 587-99.
- OLIVER, H. M., JR. Ordo and coercion: a logical critique. *So. Econ. Jour.*, Oct. 1960, pp. 81-91.
- ORCUTT, G. H. Simulation of economic systems. *Am. Econ. Rev.*, Dec. 1960, pp. 893-907.
- PASINETTI, L. L. Cyclical fluctuations and economic growth. *Oxford Econ. Papers*, June 1960, pp. 215-41.
- PESTON, M. H. Returns to scale. *Oxford Econ. Papers*, June 1960, pp. 133-40.
- PESTON, M. H. AND YAMEY, B. S. Inter-temporal price relationships with forward markets: a method of analysis. *Economica*, Nov. 1960, pp. 355-67.
- PHILLIPS, A. A. theory of interfirm organization. *Quart. Jour. Econ.*, Nov. 1960, pp. 602-613.
- QUANDT, R. E. A contribution to the pathology of gambling. With 3 figures. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 19-29.
- SHUBIK, M. Simulation of the industry and the firm. *Am. Econ. Rev.*, Dec. 1960, pp. 908-19.
- SMITH, R. S. Valentín de Foronda, diplomático y economista. *Rev. de Econ. Pol.*, May-Aug. 1959, pp. 425-64.
- SOBAJIMA, S. A suggestion for revival of wage fund theory. *Osaka Econ. Papers*, Nov. 1959, pp. 17-26.
- SPRUNG, R. Die Wirkungen eines sich im Umfang ändernden, ausgeglichenen Budgets auf den ökonomischen Kreislauf. *Finanzarchiv*, Nov. 1960, pp. 394-416.
- SVENDSEN, K. E. Eine Bibliographie der allgemeinen Lehrgeschichten der Nationalökonomie: 1933-1958. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 244-51.
- TINBERGEN, J. Teoria dell'optimum regime. *L'industria*, 1960, 3, pp. 346-69.

- VICKREY, W. Utility, strategy, and social decision rules. *Quart. Jour. Econ.*, Nov. 1960, pp. 507-35.
- WALLENIUS, J. Eräs rautateiden kustannusten riippuvuussuhteita koskeva malli ja sen käyttömahdollisuudet erilaisissa kalkyyliongelmissa. (With English summary.) *Liiketaloudellinen Aikakauskirja*, 1960, 2 (9), pp. 138-64.
- WEINTRAUB, S. The Keynesian theory of inflation: the two faces of Janus? *Internat. Econ. Rev.*, May 1960, pp. 143-55.
- WEIPPERT, G. Die wirtschaftstheoretische und wirtschaftspolitische Bedeutung der Kartelldebatte auf der Tagung des Vereins für Socialpolitik im Jahre 1905—Ein Beitrag zum Schmollerbild. *Jahrb. f. Sozialwissensch.*, 1960, 11 (2), pp. 125-83.
- WELLS, P. Keynes' aggregate supply function: a suggested interpretation. *Econ. Jour.*, Sept. 1960, pp. 536-42.
- Stockholmskolan: idéer, tillkomst och utveckling. Ett symposium. (The Stockholm School: ideas, origin, and development. A symposium.) Articles by T. Fernholm, E. Wigforss and E. Lundberg. *Ekon Tids.*, Sept. 1960, pp. 159-205.
- Symposium on restrictive practices legislation. Three articles by J. Wiseman, A. Lloyd and J. B. Heath. *Econ. Jour.*, Sept. 1960, pp. 455-84.

Economic History; Economic Development; National Economies

- AMUZEGAR, J. A typical backwardness and investment criteria. *Econ. Internaz.*, Aug. 1960, pp. 403-18.
- AUJOULAT, L.-P. Les réalités cruciales du développement africain. *Dévelop. et Civilisations*, Sept. 1960, pp. 56-66.
- BARBERI, B. Aspetti statistici nelle teorie dello sviluppo economico. *L'industria*, 1960, 3, pp. 313-45.
- BAYER, H. Entwicklungstendenzen der industriellen Gesellschaft. *De Economist*, Sept. 1960, pp. 561-90.
- BELOTTI, L. M. Economic structure and economic development. *Am. Jour. Econ. Soc.*, Oct. 1960, pp. 73-80.
- BLEJER, D. Desarrollo económico argentino y latinoamericano. *Investigacion Econ.*, 1960, 20 (3), pp. 507-22.
- BOWEN, I. The Australian economy, July 1960. *Econ. Record*, Aug. 1960, pp. 307-35.
- BRONFENBRENNER, M. A simplified Mahalanobis development model. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 45-51.
- BUTTRICK, J. A note on growth theory. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 75-82.
- CHECKLAND, S. G. Theories of economic and social evolution: the Rostow challenge. *Scot. Jour. Pol. Econ.*, Nov. 1960, pp. 169-93.
- CONZELMANN, P. Probleme der Entwicklungsförderung. Ein Beitrag zur Diskussion um die Entwicklungsländer. *Schmollers Jahrb.*, 1960, 80 (5), pp. 53-92.
- DE KOCK, M. H. Recent economic and financial developments in the Union of South Africa. *So. Afr. Jour. Econ.*, Sept. 1960, pp. 191-205.
- DEMARIA, G. Il progresso tecnologico e l'economia moderna. *Giorn. d. Econ.*, May-June 1960, pp. 275-324.
- DE SANTOS LOUREIRO, M. Considerações sobre a experiência francesa de desenvolvimento regional. (With English summary.) *Rev. do Gabinete de Estudos Corp.*, Apr.-June 1960, pp. 166-87.
- DI SIMONE, G. M. Sviluppo economico del Mezzogiorno e sviluppo economico italiano. *L'industria*, 1960, 3, pp. 370-90.
- FAIRBANK, J. K. ECKSTEIN, A. AND YANG, L. S. Economic change in early modern China: an analytic framework. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 1-26.

- FAUCHER, A. Some aspects of the financial difficulties of the Province of Canada. *Can. Jour. Econ. Pol. Sci.*, Nov. 1960, pp. 617-24.
- FRIEDMANN, J. Intellectuals in developing societies. *Kyklos*, 1960, 13 (4), pp. 513-44.
- GATOVSKII, L. Problems of economic stimulation of technical progress. *Prob. Econ.*, Sept. 1960, pp. 10-22.
- GORTER, W. Enkele gedachten over de economische betekenis van het verlies van Indonesië. *De Economist*, Oct. 1960, pp. 641-58.
- KAROTAMM, N. L'efficacité économique des investissements dans l'agriculture. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 119-35.
- KHATCHATUROV, T. Questions de méthodologie pour déterminer l'efficacité économique des investissements. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 77-94.
- KRUSE, A. Fehlerquellen in Entwicklungsprogrammen. *Zeitschr. f. die ges. Staatswiss.*, 1960, 116 (3), pp. 402-30.
- KUMAGAI, H. External economies and the problem of investment criteria. *Osaka Econ. Papers*, Feb. 1960, pp. 13-20.
- KVASHA, I. A. AND KRASOVSKII, V. Rates of reproduction and the structure of capital investments. *Prob. Econ.*, Oct. 1960, pp. 3-10.
- LUTZ, V. Italy as a study in development. *Lloyds Bank Rev.*, Oct. 1960, pp. 31-45.
- MARCUS, E. Large-scale investment and development—the dilemma of the Gabon Republic. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 64-74.
- MAURO, F. Comptabilité théorique et comptabilité pratique en Amérique Portugaise au XVII^e siècle. *Rev. de Econ.*, Mar. 1960, pp. 5-16.
- MIKESSELL, R. F. Latin American economic development: some basic issues. *Jour. Internat. Affairs*, 1960, 14 (2), pp. 3-16.
- NOVE, A. Economic rationality and Soviet growth. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 5-32.
- OKITA, S. Japan's economic prospects. *For. Affairs*, Oct. 1960, pp. 123-31.
- PANCHAMUKHI, V. R. A model for sectoral allocation of autonomous investment fund and growth of employment. *Arthaniti*, May 1960, pp. 140-51.
- PANKAJAKSHAN, T. The regulatory regime in Indian economy. *Asian Econ. Rev.*, Aug. 1960, pp. 504-21.
- POLLOCK, N. C. Industrial development in East Africa. *Econ. Geog.*, Oct. 1960, pp. 344-54.
- PÜTZ, T. Wirtschaftliche Entwicklung und zunehmende Staatstätigkeit. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 47-72.
- RAINHO NEVES, A. La economía brasileña: desde la colonia hasta el "programa de metas." *Investigacion Econ.*, 1960, 20 (3), pp. 545-64.
- SETON, F. Industrialization in overpopulated areas, a geometric interpretation of certain aspects. *Oxford Econ. Papers*, June 1960, pp. 202-14.
- SOROKIN, G. The building of communism and long-range planning. *Prob. Econ.*, Sept. 1960, pp. 23-32.
- SPENGLER, J. J. Economic development: political preconditions and political consequences. *Jour. Pol.*, Aug. 1960, pp. 387-416.
- TINBERGEN, J. Fundamental and derived aims of economic development. *Panjab Univ. Econ.*, Jan. 1960, pp. 1-6.
- USYK, M. Le système des indices fondamentaux de l'efficacité des investissements. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 95-108.
- ZIMMERMAN, L. J. The distribution of the world income. *Panjab Univ. Econ.*, Jan. 1960, pp. 36-72.
- Competition and growth—the lesson of West Germany. Comments by K. W. Roskamp, A. I. MacBean and W. G. Shepherd, R. G. Opie; reply by E. Sohmen. *Am. Econ. Rev.*, Dec. 1960, pp. 1015-30.

- La conférence scientifique sur les questions concernant la détermination de l'efficacité économique des productions agricoles. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 109-118.
- La France économique en 1959. Articles by L. Buquet, R. Marbot, P. Maillet and others. *Rev. d'Econ. Pol.*, July-Oct. 1960, pp. 573-925.
- Het indirecte economische effect van de oester- en mosselcultures voor de stedelijke kern van de gemeente Yerseke, door de Stichting voor Economisch Onderzoek der Universiteit van Amsterdam. *De Economist*, Oct. 1960, pp. 659-83.
- La méthode-type de détermination de l'efficacité économique des investissements et des nouvelles techniques dans l'économie nationale de l'U.R.S.S. *Cahiers l'Inst. de Sci. Econ. Appliquée*, no. 104, Aug. 1960, pp. 61-76.
- Standard methodology for determining the economic effectiveness of capital investments and new technology in the national economy of the USSR. *Prob. Econ.*, Oct. 1960, pp. 11-17.

Statistical Methods; Econometrics; Social Accounting

- ARROW, K. J. La statistique et la politique économique. (With English summary.) *Econ. Appliquée*, Jan.-Mar. 1960, pp. 13-26.
- BRETZFELDER, R. B. Variations in national output: commodities—services—construction. *Surv. Curr. Bus.*, Nov. 1960, pp. 14-20.
- CHOW, G. C. Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, July 1960, pp. 591-605.
- GORDON, M. J. Scope and method of theory and research in the measurement of income and wealth. *Accounting Rev.*, Oct. 1960, pp. 603-18.
- JAKSCH, H. J. Zur Einbeziehung kapazitiver Effekte von Nettoinvestitionen in Input-Outputmodelle. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 30-46.
- LAND, A. H. AND DOIG, A. G. An automatic method of solving discrete programming problems. *Econometrica*, July 1960, pp. 497-520.
- LEE, E. S. AND A. S. Internal migration statistics for the United States. *Jour. Am. Stat. Assoc.*, Dec. 1960, pp. 664-97.
- MARTIN, H. W. Productivity measurement and control. *Prod. Meas. Rev.*, May 1960, pp. 5-31.
- OHASHI, R. The study of statistics in Japan: its development, present state, and future task. *Kyoto Univ. Econ. Rev.*, Oct. 1959, pp. 48-77.
- ROBINSON, J., DOWNIE, J., WINSTEN, C. B. AND OTHERS. The present position of econometrics, a discussion. *Jour. Royal Stat. Soc.*, 1960, 123 (3), pp. 274-96.
- VARGAS TORRES, E. Las estimaciones del ingreso nacional en México. *El Trimestre Econ.*, Oct.-Dec. 1960, pp. 564-605.

Economic Systems; Planning and Reform; Cooperation

- GUTHMANN, H. G. Tax favoritism to cooperatives. *Harvard Bus. Rev.*, Nov.-Dec. 1960, pp. 116-25.
- LEBRET, L.-J. Ensemble des opérations d'analyse préalables à tout développement ordonné. *Dévelop. et Civilisations*, Sept. 1960, pp. 35-48.
- MEISSL, P. Die Körperschaftsteuer der Konsumgenossenschaften. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 182-243.

Business Fluctuations

- Dow, J. C. R. Fiscal policy and monetary policy as instruments of economic control. *Westminster Bank Rev.*, Nov. 1960, pp. 2-14.

LEWIS, J. P. Building cycles: a regional model and its national setting. *Econ. Jour.*, Sept. 1960, pp. 519-35.

ROBINSON, R. Employment, growth, and price levels: the Joint Economic Committee Report. (Review article.) *Am. Econ. Rev.*, Dec. 1960, pp. 996-1010.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

AUBOIN, R. Vers une politique monétaire moderne, dix années d'expérience et de progrès. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 186-202.

BAFFI, P. Stabilité monétaire et développement économique en Italie 1046-1960. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 128-57.

BASU, S. K. The central theme of the Radcliffe Report. *Arthaniti*, May 1960, pp. 123-39.

COTTLE, S. The earnings performance of the consumer finance industry. *Jour. Finance*, Sept. 1960, pp. 387-406.

FRÈRE, M. La restauration monétaire en Belgique. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 82-101.

GERMAIN-MARTIN, H. AND GUENSER, G. Eléments de bibliographie sur les problèmes monétaires depuis 1945. *Rev. d'Econ.*, Nov.-Dec. 1960, pp. 203-14.

HARRISS, C. L. Tesoro e Banca Centrale. *Studi Econ.*, July-Oct. 1960, pp. 300-32.

HOLTROP, M. W. Le redressement monétaire des Pays-Bas après la guerre. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 109-27.

JACOBSSON, P. Les monnaies européennes et l'économie mondiale. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 11-24.

JASAY, A. E. The working of the Radcliffe monetary system. *Oxford Econ. Papers*, June 1960, pp. 170-80.

KLEIN, J. J. Price-level and money-denomination movements. *Jour. Pol. Econ.*, Aug. 1960, pp. 369-78.

LIPSEY, R. G. Does money always depreciate? *Lloyds Bank Rev.*, Oct. 1960, pp. 1-13.

LOZANO IRUESTE, J. M. Juicio sobre los informes de la Comisión Radcliffe. *Rev. de Econ. Pol.*, May-Aug. 1959, pp. 522-32.

MACESICH, G. Sources of monetary disturbances in the United States, 1834-1845. *Jour. Econ. Hist.*, Sept. 1960, pp. 407-34.

MCCALL, J. J. Differences between the personal demand for money and the business demand for money. *Jour. Pol. Econ.*, Aug. 1960, pp. 358-68.

MELTZER, A. H. Mercantile credit, monetary policy and size of firm. *Rev. Econ. Stat.*, Nov. 1960, pp. 429-37.

OLIVERA, J. H. G. La teoría no monetaria de la inflación. *El Trimestre Econ.*, Oct.-Dec. 1960, pp. 616-28.

RIEMER, S. Israel: ten years of economic dependence. *Oxford Econ. Papers*, June 1960, pp. 141-69.

RUEFF, J. La restauration du franc. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 173-85.

SEIDEN, M. H. Pricing a banking service—the special checking account. *Jour. Finance*, Sept. 1960, pp. 371-86.

THOMAS, P. C. The fiduciary cover of India's note-issue. *Asian Econ. Rev.*, Aug. 1960, pp. 451-66.

THUNHOLM, L.-E. Swedish monetary policy and the business boom. *Skandinav. Bank. Quart. Rev.*, Oct. 1960, pp. 113-19.

TIMBERLAKE, R. H., JR. The independent Treasury and monetary policy before the Civil War. *So. Econ. Jour.*, Oct. 1960, pp. 92-103.

VETZ, O. Les enseignements de la politique monétaire en Allemagne fédérale. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 158-72.

- WEBER, A. Die Sowjetwirtschaft—heute. Eine Antikritik. *Schmollers Jahrb.*, 1960, 80 (5), pp. 23-52.
- WICKER, E. R. Some loanable-funds concepts and banking theory. *Jour. Finance*, Sept. 1960, pp. 325-32.
- YOHE, W. P. Commercial bank earnings, the "strengthening" of capital accounts, and monetary policy. *So. Econ. Jour.*, Oct. 1960, pp. 104-10.
- A new measure of money supply. *Fed. Res. Bull.*, Oct. 1960, pp. 1102-23.

Public Finance; Fiscal Policy

- BARBER, A. B. A suggested shot at a Gordian Knot of income apportionment. *Nat. Tax Jour.*, Sept. 1960, pp. 243-51.
- BHATTACHARYYA, S. K. Expenditure tax and saving. *Arthaniti*, May 1960, pp. 163-69.
- CONAC, G. Unité ou dualité dans la taxation des revenus. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 741-63.
- DAVIES, D. G. Progressiveness of a sales tax in relation to various income bases. *Am. Econ. Rev.*, Dec. 1960, pp. 987-95.
- FUJITA, S. Changes in tax structure and the level of national income. *Osaka Econ. Papers*, Mar. 1960, pp. 41-61.
- GANGEMI, L. Asterischi di finanza pubblica. *Giorn. d. Econ.*, May-June 1960, pp. 344-57.
- GOLA, G. Fondamenti razionali comuni della economia finanziaria e dell'economia del benessere. *Giorn. d. Econ.*, May-June 1960, pp. 358-82.
- HARTMANN, A. Die Finanzpolitik der deutschen Bundesregierung. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 174-81.
- HÄUSER, K. Die Unüberwältzbarkeit der Einkommen- und Körperschaftsteuer bei Gewinnmaximierung. *Finanzarchiv*, Nov. 1960, pp. 422-35.
- Ito, H. The methodological basis of the principles of taxation. *Finanzarchiv*, Nov. 1960, pp. 373-83.
- JECHT, H. Wirtschaftspolitische Probleme der gegenwärtigen Finanzpolitik. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 73-95.
- JOHNS, B. L. Pay-roll tax, costs and prices. *Econ. Record*, Aug. 1960, pp. 366-84.
- KAUFFMAN, K. M. Income tax exemption and economic development, III and IV. *Nat. Tax Jour.*, Sept. 1960, pp. 252-68.
- KULLMER, L. Zeitwahl und administrativer Vollzug als Probleme einer konjunkturorientierten Finanzpolitik. *Finanzarchiv*, Nov. 1960, pp. 384-93.
- MUSKIN, S. J. Barriers to a system of federal grants-in-aid. *Nat. Tax Jour.*, Sept. 1960, pp. 193-218.
- RENSHAW, E. F. The economics of conscription. *So. Econ. Jour.*, Oct. 1960, pp. 111-17.
- SORAT, L. L'aspect financier des sujétions imposées aux citoyens par la défense nationale. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 685-724.
- TURVEY, R. Equity and a capital gains tax. *Oxford Econ. Papers*, June 1960, pp. 181-92.
- VAN TASSEL, R. C. Conditional grants-in-aid for school construction in Massachusetts. *Nat. Tax Jour.*, Sept. 1960, pp. 219-31.
- VENEZIA, J.-C. L'application de la théorie des nullités aux actes d'imposition. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 725-40.
- WEBER, W. Aktuelle Probleme der österreichischen Finanzpolitik. Eine finanzwissenschaftliche Analyse. *Zeitschr. f. Nationalökon.*, Spring-Summer 1960, pp. 96-173.

International Economics

- ÄRBI, P. Die wirtschaftliche Integration Europas aus der Perspektive der Europäischen Freihandels-Assoziation. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1960, pp. 289-300.

- ARNEZ, V. Aid and trade: the pattern of Tito's economic relations with the world. Review (Yugoslav Affairs), 1960, 1 (1), pp. 32-47.
- AUSTRUY, J. La réglementation des ententes et les pouvoirs compensateurs dans le Marché commun. Rev. Econ., Sept. 1960, pp. 770-802.
- BACHMANN, H. Brückenschlag EWG-EFTA durch eine gegenseitige Zollsenkung? Aussenwirtschaft, Sept. 1960, pp. 1-10.
- BAFFI, P., HALLSTEIN, W. AND MEIMBERG, R. Kritische Stimmen zum Vorschlag eines Brückenschlages EWG-EFTA durch eine gegenseitige Zollsenkung. Aussenwirtschaft, Sept. 1960, pp. 11-19.
- BALOGH, T., STREETEN, P. P. Domestic versus foreign investment. Bull. Oxford Univ. Inst. Stat., Aug. 1960, pp. 213-24.
- BERGSTROM, R. Linear programming, import controls and the exchange rate where the supply of exports is inelastic. Econ. Record, Aug. 1960, pp. 385-92.
- BEZA, S. T. International trade and economic expansion: comment. Am. Econ. Rev., Dec. 1960, pp. 1031-1107.
- BIENAYMÉ, A. La réorientation de la croissance planifiée française et les risques de freinage par le commerce extérieur. Cahiers de l'Inst. de Sci. Écon. Appliquée, no. 104 (supplément), Aug. 1960, pp. 1-39.
- BOSSHARDT, A. Die langfristigen Auswirkungen der europäischen Integration auf die schweizerische Volkswirtschaft. Schweiz. Zeitschr. f. Volkswirtschaft und Stat., Sept. 1960, pp. 263-88.
- BURLEY, K. H. The overseas trade in N.S.W. coal and the British shipping industry, 1860-1914. Econ. Record, Aug. 1960, pp. 393-413.
- BYÉ, M. Intégration économique européenne et communauté des Six. Schweiz. Zeitschr. f. Volkswirtschaft und Stat., Sept. 1960, pp. 301-10.
- CAIRNCROSS, A. K. International trade and economic development. Kyklos, 1960, 13 (4), pp. 545-58.
- CAMPOS SALAS, O. La zona de libre comercio de América Latina. Investigacion Econ., 1960, 20 (3), pp. 523-44.
- CHADEAU, A.-L. Comment les transferts de fonds publics français affectent l'économie des pays d'outre-mer. Dévelop. et Civilisations, Sept. 1960, pp. 24-34.
- COPPIETERS, E. l'Accord Monétaire Européen: les progrès de la convertibilité des monnaies. Chronique de Politique Etrangère, Sept.-Nov. 1959, pp. 5-53.
- COSTANT, J.-P. Deux années d'application du traité de Rome. Réflexions sur le sens de la Communauté économique européenne. Rev. Econ., Sept. 1960, pp. 803-16.
- DELIVANIS, D. J. La Grèce face à la Communauté économique. Rev. Econ., Sept. 1960, pp. 739-63.
- DELLA PORTA, G. Repercussions of E.F.T.A. on foreign trade in E.E.C. and Italy. Rev. Econ. Conditions in Italy, July 1960, pp. 343-58.
- EINZIG, P. Some recent changes in forward exchange practices. Econ. Jour., Sept. 1960, pp. 485-95.
- FERRERO, R. A. El Mercado Común Latinoamericano. Rev. Bancaria, May-June 1960, pp. 210-23.
- FRUMKIN, A. The bourgeois theory of the "foreign trade multiplier." Prob. Econ., Oct. 1960, pp. 54-64.
- GUINDEY, G. La banque des règlements internationaux hier et aujourd'hui. Rev. d'Econ. Pol., Nov.-Dec. 1960, pp. 37-57.
- HAHN, L. A. Goldaufwertung und Dollarabwertung. Kyklos, 1960, 13 (4), pp. 456-94.
- HANSEN, B. AND NILSSON, T. Foreign trade credits. Skandinav. Bank. Quart. Rev., July 1960, pp. 91-98.

- HUG, W. Die wettbewerbsrechtlichen Vorschriften der Verträge über die Montanunion und die Europäische Wirtschaftsgemeinschaft und ihre Anwendbarkeit auf im Ausland veranlasste Wettbewerbsbeschränkungen. *Wirtschaft und Recht*, 1960, 12 (3), pp. 172-205.
- JASAY, A. E. *Politica nazionale e mercato internazionale dei capitali*. (With English summary.) *Econ. Internaz.*, Aug. 1960, pp. 470-84.
- JOHNSON, H. G. The cost of protection and the scientific tariff. *Jour. Pol. Econ.*, Aug. 1960, pp. 327-45.
- . Income distribution, the offer curve and the effects of tariffs. *Man. School Econ. Soc. Stud.*, Sept. 1960, pp. 215-42.
- KENEN, P. B. International liquidity and the balance of payments of a reserve-currency country. *Quart. Jour. Econ.*, Nov. 1960, pp. 572-86.
- KNESCHAUER, F. Der wirtschaftliche Wettlauf zwischen den Vereinigten Staaten und der Sowjetunion. *Aussenwirtschaft*, Sept. 1960, pp. 31-55.
- LIPSEY, R. G. The theory of customs unions: a general survey. *Econ. Jour.*, Sept. 1960, pp. 496-513.
- MACDOUGALL, G. D. A. The benefits and costs of private investment from abroad: a theoretical approach. *Bull. Oxford Univ. Inst. Stat.*, Aug. 1960, pp. 187-212.
- MARCHAL, A. De quelques faux dogmes en matière d'organisation européenne. *Rev. Econ.*, Sept. 1960, pp. 673-704.
- MIROSHNICHENKO, B. Coordination of the national economic plans of the socialist countries. *Prob. Econ.*, Oct. 1960, pp. 45-53.
- NEAL, A. C. New economic policies for the West. *For. Affairs*, Jan. 1961, pp. 247-58.
- OLIVER, F. R. Shifting demand schedules and the terms and volume of trade. *De Economist*, Apr. 1960, pp. 21-27.
- PANKIN, M. Importance of economic ties with the USSR for the development of South-east Asia. *Prob. Econ.*, Aug. 1960, pp. 27-33.
- RAMASWAMI, V. K. The effects of accumulation on the terms of trade. *Econ. Jour.*, Sept. 1960, pp. 514-18.
- RIEBEN, H. La Suisse et la Communauté européenne. *Rev. Econ.*, Sept. 1960, pp. 705-38.
- ROY, P. N. The monetary impact of movements in the balance of payments. *Arthaniti*, May 1960, pp. 103-22.
- RUBINSHEIN, G. The development of Soviet imports. *Prob. Econ.*, Aug. 1960, pp. 3-9.
- RUDLOFF, M. Effets d'accélération et théorie du commerce international. *Cahiers de l'Inst. de Sci. Econ. Appliquée*, no. 104 (supplément), Aug. 1960, pp. 1-22.
- SALIN, E. Für ein Alignment der Währungen. *Kyklos*, 1960, 13 (4), pp. 437-55.
- SAVAGE, I. R. AND DEUTSCH, K. W. A statistical model of the gross analysis of transaction flows. *Econometrica*, July 1960, pp. 551-72.
- SHCHETININ, V. Economic assistance of the socialist countries to young national states. *Prob. Econ.*, Aug. 1960, pp. 34-40.
- SILVA, N. Foreign capital in economic development. *Asian Econ. Rev.*, Aug. 1960, pp. 437-50.
- SMITH, D. C. Monetary-fiscal policy and economic growth in an open economy. *Quart. Jour. Econ.*, Nov. 1960, pp. 614-32.
- SOLDATI, A. Le fonctionnement de la Communauté Economique Européenne. *Aussenwirtschaft*, Sept. 1960, pp. 20-30.
- SUNDBOM, I. Aspekter på de internationella kapitalrörelserna. *Ekon. Samfundets Tids.*, Aug. 1960, pp. 145-58.
- Tew, B. The use of restrictions to suppress external deficits. *Man. School Econ. Soc. Stud.*, Sept. 1960, pp. 243-62.
- TIMS, W. World import trade, 1925-1957. *Man. School Econ. Soc. Stud.*, Sept. 1960, pp. 263-98.

- TRIFFIN, R. Intégration économique européenne et politique monétaire. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 58-81.
- . Rasgos distintivos del mecanismo de equilibración de la balanza de pagos y los tipos de cambio. *Moneda y Crédito*, June 1960, pp. 3-16.
- VON MANGOLDT, H. K. De l'union européenne des paiements à la convertibilité et à l'accord monétaire européen. *Rev. d'Econ. Pol.*, Nov.-Dec. 1960, pp. 25-36.
- WATANABE, T. External economies and international trade. *Osaka Econ. Papers*, Mar. 1960, pp. 1-10.
- WEILLER, J. Fluctuations économiques et niveau d'ajustement de la balance des paiements: l'expérience française au cours des années de grande dépression. *Cahiers de l'Inst. de Sci. Econ. Appliquée* no. 104, (supplément), Aug. 1960, pp. 1-28.
- WHEELER, L. A. The new agricultural protectionism and its effect on trade policy. *Jour. Farm Econ.*, Nov. 1960, pp. 797-810.
- WOLFF, J. Les liquidités internationales et la rivalité livre-dollar. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 636-56.
- YAKEMTCHOUK, R. La Belgique et ses accords de paiement. *Annales de Sci. Econ. Appliquées*, July 1960, pp. 343-64.
- Capital outlays abroad by U. S. companies. *Surv. Curr. Bus.*, Oct. 1960, pp. 18-24.
- United States foreign investments: measures of growth and economic effects. *Surv. Curr. Bus.*, Sept. 1960, pp. 15-24.

Business Finance; Investment and Security Markets; Insurance

- BIERMAN, H., Jr. Measuring financial liquidity. *Accounting Rev.*, Oct. 1960, pp. 628-32.
- BRIMMER, A. F. Credit conditions and price determination in the corporate bond market. *Jour. Finance*, Sept. 1960, pp. 353-70.
- DRYDEN, M. M. The MAPI urgency rating as an investment-ranking criterion. *Jour. Bus. Univ. Chicago*, Oct. 1960, pp. 327-41.
- JACOBS, D. P. The marketable security portfolios of non-financial corporations, investment practices and trends. *Jour. Finance*, Sept. 1960, pp. 341-52.
- SAKUDŌ, Y. Growth of securities market in feudal Japan. *Osaka Econ. Papers*, Mar. 1960, pp. 25-40.
- SORTER, G. H. AND BENSTON, G. Appraising the defensive position of a firm: the interval measure. *Accounting Rev.*, Oct. 1960, pp. 633-40.
- STREET, D. M. The role of equipment obligations in postwar railroad financing. *Jour. Finance*, Sept. 1960, pp. 333-40.
- VACCÀ, S. Partecipazioni azionarie e rapporti contrattuali nella formazione dei gruppi aziendali (With English summary.) *Risparmio*, July 1960, pp. 1109-48.
- WALTER, J. E. AND WILLIAMSON, J. P. Organized securities exchanges in Canada. *Jour. Finance*, Sept. 1960, pp. 307-24.
- Business financing in 1960. *Surv. Curr. Bus.*, Oct. 1960, pp. 13-17.

Business Organization; Managerial Economics; Marketing; Accounting

- AMEY, L. R. Business efficiency: an interfirm comparison. *Prod. Meas. Rev.*, May 1960, pp. 32-45.
- CLARKSON, G. P. E. AND SIMON, H. A. Simulation of individual and group behavior. *Am. Econ. Rev.*, Dec. 1960, pp. 920-32.
- COHEN, K. J., CYERT, R. M., DILL, W. R. AND OTHERS. The Carnegie Tech management game. *Jour. Bus. Univ. Chicago*, Oct. 1960, pp. 303-21.
- FARRIS, P. L. Uniform grades and standards, product differentiation and product development. *Jour. Farm Econ.*, Nov. 1960, pp. 854-63.

- HANAPPE, J. Problèmes d'entretien et de renouvellement d'un parc automobile. *Annales de Sci. Econ. Appliquées*, July 1960, pp. 365-97.
- MAGEE, J. F. Operations research in making marketing decisions. *Jour. Marketing*, Oct. 1960, pp. 18-23.
- PESSEMIER, E. A. An experimental method for estimating demand. *Jour. Bus. Univ. Chicago*, Oct. 1960, pp. 373-83.
- SHYCON, H. N. AND MAFFEI, R. B. Simulation—tool for better distribution. *Harvard Bus. Rev.*, Nov.-Dec. 1960, pp. 65-75.
- TOCHTITCH, D. Workers' management in practice. *Review (Jugoslav Affairs)*, 1960, 1 (1), pp. 48-65.

Industrial Organization; Government and Business; Industry Studies

- BUTLER, E. B. The disposal of used plant and machinery by U. K. manufacturing industry 1948-49 and 1956-57. *Bull. Oxford Univ. Inst. Stat.*, Aug. 1960, pp. 259-69.
- CARLSON, S. Management of state-owned industries. *Skandinav. Bank. Quart. Rev.*, July 1960, pp. 81-90.
- COLE, H. J. D., HOLLAND, D. G., POSNER, M. V. Factory productivity and efficiency. *Bull. Oxford Univ. Inst. Stat.*, Aug. 1960, pp. 151-86.
- EDWARDS, R. S. The finance of electricity supply. *Lloyds Bank Rev.*, Oct. 1960, pp. 14-30.
- FREUDENBERGER, H. The woolen goods industry of the Habsburg monarchy in the eighteenth century. *Jour. Econ. Hist.*, Sept. 1960, pp. 383-406.
- HAIGHT, J. T. The restrictive business practices clause in United States treaties: an anti-trust tranquilizer for international trade. *Yale Law Jour.*, Dec. 1960, pp. 240-57.
- JUNG, A. F. Price policy and discounts in the medium- and high-priced car market. *Jour. Bus. Univ. Chicago*, Oct. 1960, pp. 342-47.
- LAKDAWALA, D. T. Contribution of public enterprises. *Indian Econ. Jour.*, Apr. 1960, pp. 395-404.
- MERCIER, J. La révolution des transports et les frontières. *Rev. Econ.*, July 1960, pp. 609-35.
- MESAKI, K. Rationalization and monopoly—with reference to the concentration of economic power, in particular to the industrial combination. *Osaka Econ. Papers*, Nov. 1959, pp. 1-16.
- SIMONSON, G. R. The demand for aircraft and the aircraft industry, 1907-1958. *Jour. Econ. Hist.*, Sept. 1960, pp. 361-82.
- STEFANI, G. Problemi tariffari delle industrie di pubblico interesse: l'energia elettrica. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1960, pp. 816-26.
- . Problemi tariffari delle industrie di pubblico interesse: il servizio telefonico. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1960, pp. 939-49.
- STONE, P. A. The economics of building designs (with discussion.) *Jour. Royal Stat. Soc.*, 1960, 123 (3), pp. 237-73.
- VAN SICKLE, J. V. The financing and administration of education. *So. Econ. Jour.*, Oct. 1960, pp. 118-27.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BADOUIN, R. Le rôle du secteur agricole dans la phase initiale du développement économique. *Rev. Sci. Fin.*, Oct.-Dec. 1960, pp. 617-35.
- BROWN, W. H., JR. AND GILBERT, C. E. Capital programming in Philadelphia: a study of long-range planning. *Am. Pol. Sci. Rev.*, Sept. 1960, pp. 659-68.
- DORÉ, R. P. Agricultural improvement in Japan: 1870-1900. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 69-92.

- DORNER, P. The farm problem: a challenge to social invention. *Jour. Farm Econ.*, Nov. 1960, pp. 811-26.
- FUCHS, R. J. Intraurban variation of residential quality. *Econ. Geog.*, Oct. 1960, pp. 313-25.
- HENDRY, J. B. Land tenure in South Viet Nam. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 27-44.
- KELLEY, W. T. Lo stimolo della domanda nel marketing americano. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1960, pp. 923-38.
- LINGE, G. J. R. The concentration and dispersion of manufacturing in New Zealand. *Econ. Geog.*, Oct. 1960, pp. 326-43.
- MCKIE, J. W. Market structure and uncertainty in oil and gas exploration. *Quart. Jour. Econ.*, Nov. 1960, pp. 543-71.
- NAKAJIMA, C. Effects of yield fluctuation. *Osaka Econ. Papers*, Mar. 1960, pp. 11-24.
- NAMIKI, M. The farm population in the national economy before and after World War II. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 29-42.
- OHKAWA, K. AND ROSOVSKY, H. The role of agriculture in modern Japanese economic development. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 43-68.
- RUTTAN, V. W. Research on the economics of technological change in American agriculture. *Jour. Farm Econ.*, Nov. 1960, pp. 735-54.
- VACCHELLI, P. L. La produzione di energia elettrica nel lungo periodo e la cosiddetta legge dell'Ailleret (I). *Econ. Internaz.*, Aug. 1960, pp. 485-510.
- VAN VALKENBURG, S. An evaluation of the standard of land use in Western Europe. *Econ. Geog.*, Oct. 1960, pp. 283-95.
- Agricultural policy, politics, and the public interest. Articles by L. Witt, D. G. Johnson, W. W. Cochrane and others. *Annals Am. Acad. Pol. Soc. Sci.*, Sept. 1960, pp. 1-124.
- Ufficio Studi della Cassa di Risparmio delle Provincie Lombarde: L'agricoltura nei Paesi della Comunità Economica Europea. (With English summary.) *Risparmio*, Aug. 1960, pp. 1322-56.

Labor Economics

- ALLEN, V. L. AND WILLIAMS, S. The growth of trade unionism in banking. *Man. School Econ. Soc. Stud.*, Sept. 1960, pp. 299-318.
- DA SILVA PEREIRA, R. O salário mínimo perante a rentabilidade industrial. (With English summary.) *Rev. do Gabinete de Estudos Corp.*, Apr.-June 1960, pp. 188-99.
- DE SCHWEINITZ, D. Consultation and negotiation in Swedish factories. *Mo. Lab. Rev.*, Oct. 1960, pp. 1039-44.
- DONHOWE, G. M. Economic analysis in Norwegian collective bargaining. *Jour. Bus. Univ. Chicago*, Oct. 1960, pp. 363-72.
- EICHER, J.-C. La rentabilité de l'investissement humain. *Rev. Econ.*, July 1960, pp. 577-608.
- EL SHAFEI, A. M. N. The current labour force sample survey in Egypt (U.A.R.). *Internat. Lab. Rev.*, Nov. 1960, pp. 432-49.
- FISCHLOWITZ, E. Manpower problems and prospects in Latin America. *Mo. Lab. Rev.*, Sept. 1960, pp. 909-17.
- GNANASEKARAN, K. S. Increasing length of working life and its implications. *Indian Econ. Jour.*, Apr. 1960, pp. 405-14.
- GROB, G. N. Organized labor and the negro worker, 1865-1900. *Lab. Hist.*, Spring 1960, pp. 164-76.
- HANCOCK, K. Wages policy and price stability in Australia, 1953-60. *Econ. Jour.*, Sept. 1960, pp. 543-60.

- HARDMAN, J. B. S. The needle-trades unions: a labor movement at fifty. *Soc. Research*, Autumn 1960, pp. 321-58.
- HERZOG, P. M. AND STONE, M. Voluntary labour arbitration in the United States. *Internat. Lab. Rev.*, Oct. 1960, pp. 301-26.
- HOOS, I. R. The impact of office automation on workers. *Internat. Lab. Rev.*, Oct. 1960, pp. 363-88.
- HOWARD, J. W., JR. Frank Murphy and the sit-down strikes of 1937. *Lab. Hist.*, Spring 1960, pp. 103-40.
- ISAAC, J. E. Manpower planning in Australia. *Internat. Lab. Rev.*, Nov. 1960, pp. 403-31.
- JOHNSON, D. G. Output and income effects of reducing the farm labor force. *Jour. Farm Econ.*, Nov. 1960, pp. 779-96.
- KERR, C., HARBISON, H., DUNLOP, J. T. AND MYERS, C. A. Industrialism and industrial man. *Internat. Lab. Rev.*, Sept. 1960, pp. 236-50.
- KOTHARI, V. N. Long-term trends in the employment pattern in India. *Indian Econ. Jour.*, Apr. 1960, pp. 415-40.
- LALOIRE, M. Les disparités des salaires (With English summary.) *Rev. do Gabinete de Estudos Corp.*, Jan.-Mar. 1960, pp. 5-19.
- LANGFELDT, K. Scandinavian socialism and the Norwegian labour movement. *The Review*, Oct. 1960, pp. 26-32.
- MEHLING, J. Grève et détermination des salaires à travers un exemple canadien. *Rev. Econ.*, July 1960, pp. 636-55.
- MURTEIRA, M. Um problema da política de salários. (With English summary.) *Rev. do Gabinete de Estudos Corp.*, Jan.-Mar. 1960, pp. 26-57.
- OLEA, M. A. La evolución de la política de salarios en España. (With English summary.) *Rev. do Gabinete de Estudos Corp.*, Apr.-June 1960, pp. 153-65.
- SAVILLE, L. Un problema economico generalmente trascurato: la popolazione che invecchia. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1960, pp. 857-63.
- SOFFER, B. A theory of trade union development: the role of the "autonomous" workman. *Lab. Hist.*, Spring 1960, pp. 141-63.
- STRUMILIN, S. Social productivity of labor and methods of measuring it. *Prob. Econ.*, Oct. 1960, pp. 34-44.
- SUMMERS, C. W. The law of union discipline: what the courts do in fact. *Yale Law Jour.*, Dec. 1960, pp. 175-224.
- WEINSTEIN, P. A. Featherbedding: a theoretical analysis. *Jour. Pol. Econ.*, Aug. 1960, pp. 379-87.
- ZATSEPIN, V. System of remuneration in the coal mines of the Ukrainian Soviet Socialist Republic. *Internat. Lab. Rev.*, Sept. 1960, pp. 251-61.
- The course of ideology in international labor. *Mo. Lab. Rev.*, Oct. 1960, pp. 1031-38.

Population; Welfare Programs; Consumer Economics

- BONOW, M. The co-operative movement and the protection of the consumer. *Internat. Lab. Rev.*, Oct. 1960, pp. 327-40.
- COHEN, W. J., DAVID, A. M., TILLOVE, R. AND OTHERS. Our developing social security system: the first twenty-five years. *Indus. Lab. Rel. Rev.*, Oct. 1960, pp. 7-118.
- HOUGHTON, D. H. Men of two worlds: some aspects of migratory labour. *So. Afr. Jour. Econ.*, Sept. 1960, pp. 177-90.
- JAFFE, A. J. AND AZUMI, K. The birth rate and cottage industries in underdeveloped countries. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 52-63.
- LASORSA, G. Durata della vita economicamente attiva e sicurezza sociale. *Studi Econ.*, July-Oct. 1960, pp. 345-80.

- LESTER, R. A. The economic significance of unemployment compensation, 1948-1959. *Rev. Econ. Stat.*, Nov. 1960, pp. 349-72.
- PAGEL, I. Die Markstellung des Konsumenten. *Jahrb. Sozialwissensch.*, 1960, 11 (2), pp. 184-215.
- RENOUVIN, P. Démographie et relations internationales. *Population*, Aug.-Sept. 1960, pp. 625-54.
- TAEUBER, I. B. Urbanization and population change in the development of modern Japan. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 1-28.
- TIMLIN, M. F. Canada's immigration policy, 1896-1910. *Can. Jour. Econ. Pol. Sci.*, Nov. 1960, pp. 517-32.

Related Disciplines

- CARVER, T. N. The first two decades of the American Economic Association: comment. *Am. Econ. Rev.*, Dec. 1960, p. 1014.
- CLEARY, F. R. AND EDWARDS, D. J. The origins of the contributors to the A.E.R. during the 'fifties. *Am. Econ. Rev.*, Dec. 1960, pp. 1011-13.
- COLM, G. In defense of the public interest. *Soc. Research*, Autumn 1960, pp. 295-307.
- GOULET, D. Pour une éthique moderne du développement. *Dévelop. et Civilisations*, Sept. 1960, pp. 10-23.
- MEYNAUD, J. Qu'est-ce que la technocratie? *Rev. Econ.*, July 1960, pp. 497-526.
- ROSSI, G. L'impresa sovietica di Stato. *Pol. d. Scambi*, July-Aug. 1960, pp. 5-44.
- SAVILLE, J. Henry George and the British labor movement. *Sci. and Soc.*, Fall 1960, pp. 321-33.
- SMITH, R. J. Pre-industrial urbanism in Japan: a consideration of multiple traditions in a feudal society. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 241-57.
- SMITH, T. C. Landlords' sons in the business elite. *Econ. Develop. and Cult. Change*, Oct. 1960, pp. 93-108.

NOTES

Arthur F. Burns, National Bureau of Economic Research, has been appointed chairman of the American Economic Association nominating committee. Suggestions for officers of the Association in 1962 should be sent to him as early as possible.

The Association announces the publication of Volume 1 of the *Index of Economic Journals* covering the period 1886-1924. Volumes 2 to 5, for the period 1925-59, will be published during the Spring of 1961. Members of the Association are invited to take advantage of a prepublication offer of \$10.50 for the complete set. After April 15, 1961 the price will be \$25.00. Orders may be placed with the publisher, Richard D. Irwin, Inc., Homewood, Illinois.

Announcements

The Social Security Administration has announced the initiation of a Cooperative Research and Demonstration Grant Program which will provide support for research of significance to social security programs and social welfare. At least during the first year priority will be given to projects related directly to the reduction of dependency and to improvement in programs under the Social Security Act. Grants will be made to public agencies and other nonprofit organizations, not to individuals. Application forms and instructions may be obtained from Dr. Ida C. Merriam, Director, Division of Program Research, Office of the Commissioner, Social Security Administration, 330 Independence Ave., S.W., Washington 25, D.C.

The *Immigration Research Digest* is being published under the auspices of the Committee on Research and Studies of the American Immigration and Citizenship Conference. It is a mimeographed summary of important new research contributions to the knowledge of migration—both in the United States and internationally. There will be two issues a year prepared under the editorship of Professor E. P. Hutchinson, Wharton School of Finance and Commerce, University of Pennsylvania. The editor will appreciate suggestions for materials to be included in the series from persons interested in developments in the field of migration.

The annual national conference and convention of the American Institute of Industrial Engineers will be held May 11-13, 1961 at the Sheraton Cadillac Hotel in Detroit. The entire program is designed to provide a variety of modern practical management tools to industry in general. Information about the convention may be obtained from James E. McCartney, 12th Annual A.I.I.E. Conference, Room 29, 4181 Oakman Blvd., Detroit 4, Michigan.

Deaths

Nicola Garrone, emeritus, University of Rome.
Russell C. Leffingwell, Morgan Guaranty Trust Co., October 2, 1960.
William H. Martin, Pennsylvania State University, November 10, 1960.
Lewis E. Severson, Beloit College, December 5, 1960.

Retirements

Esther E. Nelson, Hunter College.
V. R. Wertz, Ohio State University, October 1960.

Visiting Foreign Scholars

Just Faaland, Chr. Michelsens Institutt, Bergen, Norway: visiting professor of economics, University of Michigan, second semester 1960-61.

John B. Heath, University of Manchester, England: Northwestern University, January to June, 1961.

Jürg Niehans, Zurich, Switzerland: visiting professor of political economy, Johns Hopkins University, February 1961-February 1962.

Joan Robinson, Newnham College, Cambridge University: Northwestern, Chicago and Purdue Universities, March and April, 1961.

Hugh Rose, Exeter University, England: visiting associate professor, Northwestern University.

Orhan Tuna, University of Istanbul: visiting professor, New York State School of Industrial and Labor Relations, Cornell University, 1960-61.

Promotions

William H. Andrews, Jr.: professor of economics, Indiana University.

William J. Barber: associate professor of economics, Wesleyan University.

Joseph A. Batchelor: associate professor of economics, Indiana University.

C. C. Bowen: assistant professor, Ohio State University.

Paul C. Clayton: assistant professor, Ohio State University.

Robert C. Connor: assistant professor of production management, Graduate School of Business, University of Chicago.

Robert Eisner: professor of economics, Northwestern University.

Louis Fier: assistant professor, Brooklyn College.

Clifton M. Grubbs: assistant professor of economics, University of Colorado.

James B. Hendry: associate professor of economics, Michigan State University.

Harry Malisoff: professor, Brooklyn College.

James L. McKenney: assistant professor of business administration, Graduate School of Business Administration, Harvard University.

Janet K. Messing: assistant professor of economics, Hunter College.

Max G. Mueller: assistant professor of economics, Michigan State University.

Lester G. Telser: associate professor of marketing, Graduate School of Business, University of Chicago.

F. W. Tuttle: professor of economics, University of Florida.

Arnold Weber: associate professor of industrial relations, Graduate School of Business, University of Chicago.

Fred M. Westfield: associate professor of economics, Northwestern University.

Fred Witney: professor of economics, Indiana University.

Administrative Appointments

George K. Chacko: manager, operations research department, Hughes Semiconductor Division, Newport Beach, California.

Frank T. de Vyver: assistant provost, Duke University.

Morris E. Garnsey: chairman, department of economics, University of Colorado.

Blaine E. Grimes: chairman, department of economics, Ohio Wesleyan University.

George B. Heliker: chairman, department of economics, Montana State University.

Walter E. Hoadley: vice-president and treasurer, Armstrong Cork Co., Lancaster, Pennsylvania.

Richard A. Musgrave: chairman, department of political economy, Johns Hopkins University.

Louis B. Perry, Pomona College: president, Whitman College.

Richard K. Stuart, University of Maine: chairman and professor, department of economics, Whitman College.

John G. Turnbull: acting chairman, department of economics, University of Minnesota.

Charles J. Walsh: chairman, department of economics, Fordham University.

Michael T. Wermel: dean, College of Business Administration and professor of economics, University of Hawaii.

Appointments

Michael Belshaw: assistant professor of economics, Hunter College.

Glenn Burress: assistant professor of economics, University of Cincinnati.

Stephen Campbell: department of commerce and economics, University of Vermont.

Lowell J. Chawner, formerly U. S. Operations Mission to Korea: visiting professor, College of Business Administration, University of Washington.

Carl F. Christ, University of Chicago: professor of political economy, Johns Hopkins University.

R. L. Darcy, Oregon State College: Kansas State University.

Henry B. Eyring: research associate in business administration, Graduate School of Business Administration, Harvard University.

Milton Gilbert, Organisation for European Economic Co-operation, Paris: economic adviser, The Bank for International Settlements, Basle.

Albert L. Gray, Jr.: professor of economics, Baldwin-Wallace College.

Roy B. Helfgott, Pennsylvania State University: Industrial Relations Counselors, Inc.

John B. Henderson: Andrew Wells Robertson Professor of Economics, Allegheny College.

Randall W. Hinshaw: professor of international economics, Claremont Graduate School.

Howard T. Hovde: professor of marketing, College of Business Administration, Drexel Institute of Technology.

Subbiah Kannappan, Reed College: department of economics, Ohio Wesleyan University.

Jeremiah Kaplan: professorial lecturer in behavioral sciences, Graduate School of Business, University of Chicago.

Abdul G. Khan: visiting lecturer in industrial development, Graduate School of Public and International Affairs, University of Pittsburgh.

John Klein, Oklahoma State University: associate professor of economics, Fordham University.

Paul F. Lazarsfeld: visiting lecturer on business administration, Graduate School of Business Administration, Harvard University.

James R. Lewis, Ohio State University: department of agricultural economics, Colorado State University.

Harald Malmgren: assistant professor of economics, Cornell University.

Paul E. Merz: associate professor, department of economics, Southwest Missouri State College.

K. E. Miller: assistant professor of agricultural economics and research associate, Bureau of Business and Economic Research, University of Missouri.

Dick Netzer, Federal Reserve Bank of Chicago: economic consultant, Regional Plan Association, Inc.

Egon Neuberger: economist, The RAND Corporation.

Peter Newman: lecturer in political economy, Johns Hopkins University, spring term.

Harold C. Passer: company economist, Eastman Kodak Company, Rochester, New York.

Don V. Plantz, University of Kansas: associate professor, department of economics, Arizona State University.

G. David Quiria: petroleum economics consultant, Department of Northern Affairs and National Resources, Ottawa, Canada.

Leonard Rapping: assistant economist, The RAND Corporation.

Jerome Rothenberg: visiting associate professor, Northwestern University.

Gregor Sebba: professor, Graduate Institute of the Liberal Arts, Emory University.

Warner Sichel, instructor in economics, Western Michigan University.

Ezra Solomon, University of Chicago: director, International Center for the Advancement of Management Education, School of Business, Stanford University.

Benjamin P. Spiro: consultant on development banks, Inter-American Development Bank.

William O. Thweatt, International Cooperation Administration: program specialist, Ford Foundation, first at the International Program in Taxation at Harvard University, then to Katmandu as research and planning economist to the Planning Ministry of the Government of Nepal.

Leaves for Special Appointments and Assignments

Irving Brecher, McGill University: joint director, Williams College Project Office, Karachi, Pakistan, for one year, August 1960-61.

Alfred L. Edwards, Michigan State University: advisor of economics, MSU Project, University of Nigeria, September 1960 to September 1962.

Max E. Fieser, Arizona State University: research associate, University of Oregon.

George A. Fuller, University of Utah: Fulbright Lecturer, University of Helsinki, 1960-61.

Rolf Hayn, University of Oklahoma: United Nations, New York.

Walter W. Heller, University of Minnesota: chairman, Council of Economic Advisers to the President.

George F. Henning, Ohio State University: International Cooperation Administration consultant, Turkey.

Herbert B. Howell, Iowa State University: International Cooperation Administration to consult with the Argentine government on beef production, fall 1960.

James A. Maxwell, Clark University: staff appointment to carry out a study of proposal for extending federal financial assistance to state-local governments, Brookings Institution, spring and summer, 1961.

Lester B. McAllister, Beloit College: National War College, Washington, 1961-62.

Frank B. Miller, New York State School of Industrial and Labor Relations: visiting professor, University of Istanbul, Turkey, 1960-61.

John C. Murdock, University of Missouri: research project with Community Studies, Inc., Kansas City, September 1960-61.

Andreas G. Papandreou, University of California, Berkeley: director, Center of Economic Research of the Academy of Athens and economic advisor to the Bank of Greece.

John H. Smith, American University, Washington: professorial lecturer in statistics, Graduate School of Business, University of Chicago.

Wolfgang F. Stolper, University of Michigan: economic adviser to the Ministry of Economic Development, Federation of Nigeria, until summer 1962.

C. R. Wharton, Jr., Council on Economic and Cultural Affairs, Inc., Singapore region: visiting fellow, department of agricultural economics, Cornell University, fall term 1960.

Arthur A. Wichmann, University of Wichita: assistant program officer, International Cooperation Administration, Burma, from September 1959 for two years.

Resignations

Sanford Bacon: Wharton School, University of Pennsylvania.

Dewitt C. Dearborn: Graduate School of Business, Harvard University.

Myra Janco: School of Business, Indiana University.

Richard Rainey: The RAND Corporation.

Williard E. Stone: Wharton School, University of Pennsylvania.

Miscellaneous

Peggy Biele, formerly of Julian Langner Research, Inc.: has formed her own firm Peggy Biele Research Associates, Inc., Miami, Florida.

Raymond Coleman: resigning as dean of the College of Commerce, West Virginia University, June 1961; after leave of absence 1961-62 for research under Food Foundation grant, will return as professor of economics and management.

Nestor Marquez-Diaz, Loyola University of the South: has opened a business and economic consulting office in New Orleans.

Richard S. Thorn: has been transferred from the European Office of the International Monetary Fund to the Western Hemisphere Department, Washington, D.C.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Economist: A leading financial institution offers opportunity for an economist with graduate degree, doctorate preferred, and a strong background in money and banking, forecasting, and national income analysis. This position requires the ability to conduct independent research on a wide variety of problems bearing on Company operations. Starting salary \$7,300-\$8,500, depending on education and experience. Please send résumé giving full account of professional background. All replies will remain strictly confidential. P230

Economist: Opening June 1 or September 1, 1961, for a rapidly growing state college located in beautiful southern West Virginia. Doctor's degree required. Division of Business staff consists of eleven young faculty members and an enrollment of more than 300 majors. Concord College is accredited by the North Central Association of Colleges and Secondary Schools and the National Council for Accreditation of Teacher Education. Apply to Dr. Cloyd P. Armbrister, Chairman and Professor, Division of Business, Concord College, Athens, West Virginia.

Economics, principles and one advanced course: Ph.D. or all work completed except thesis (others will be considered) for eastern Catholic men's college, February or September, 1961. Instructor's rank, \$4,000-\$6,000; assistant professor, \$5,000-\$7,000. Rank and salary according to education and experience. P232

Accounting: Desire person with at least a master's degree, practical experience and teaching experience in accounting; C.P.A. certificate would be desirable. Rank from instructor to associate professor. Salary range \$5,500-\$7,500. P233

Economist: To do research and consultant work with the Department of the Treasury, San Juan, Puerto Rico. Position will be on Civil Service basis. Ph.D. degree, or advanced work leading to it, required; specialization in public finance and/or money and banking desirable. No previous experience required. Annual salary \$7,200 plus personal travel expenses to and from Puerto Rico. Persons interested please write to the Director, Office of Economic and Financial Research, Department of the Treasury, P.O. Box 4515, San Juan, Puerto Rico.

Economist: Catholic college in Eastern Canada desires M.A. or Ph.D. to begin in September, 1961. Specialization in one or two of the following fields: money and banking, labor, statistics. Rank (lecturer or assistant professor) and salary according to education and experience. P234

THE AMERICAN ECONOMIC REVIEW

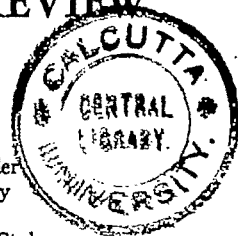
BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Rendigs Fels
Arnold C. Harberger
Alfred E. Kahn
Joseph A. Pechman

Melvin W. Reder
Tibor Scitovsky
Robert Solow
Wolfgang F. Stolper



Volume LI

JUNE 1961

Number 3

ARTICLES

- The Short Cycle in Residential Construction, 1946-59 *J. M. Guttentag* 275
- The Cyclical Sensitivity of the Labor Supply *W. L. Hansen* 299
- Effect of Tariff Changes on the Prices and Volume of Imports *M. E. Kreinin* 310
- Karl Marx and Soviet National Income Theory *Vaclav Holesovsky* 325
- Problems and Possibilities of Industrial Price Control: Postwar French Experience *John Sheahan* 345
- Equilibrium Growth Models (Review Article) *Joan Robinson* 360

COMMUNICATIONS

- Research, Invention, Development and Innovation *Edward Ames* 370
- Foreign Exchange Guarantees and the Dollar *S. T. Beza and Gardner Patterson* 381
- The Wellesley Undergraduate Tutorial *R. V. Clemence* 385
- Windfall Income and Consumption—Additional Evidence *M. E. Kreinin* 388
- A Model of Price Flexibility: Comment *W. J. Yordon, Jr.* 390
- Reply *J. V. Yance* 392
- Patterns of Industrial Growth: Comment *Bela Balassa* 394

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1961

BOOK REVIEWS

BAYER, ed., <i>Wirtschaftsprognose und Wirtschaftsgestaltung</i> , by S. Wasowski	421
BERNSTEIN, <i>The Lean Years—A History of the American Worker, 1920-1933</i> , by J. P. Goldberg	480
BLACK, <i>The Diplomacy of Economic Development</i> , by J. D. DeForest	445
CAULEY, <i>Public Finance and the General Welfare</i> , by M. H. Gillim	466
CROSSER, <i>State Capitalism in the Economy of the United States</i> , by F. Sethur	453
DEBREU, <i>Theory of Value. An Axiomatic Analysis of Economic Equilibrium</i> , by L. Hurwicz	414
FELLNER, <i>Emergence and Content of Modern Economic Analysis</i> , by K. D. Roose ..	428
FOG, <i>Industrial Pricing Policies: An Analysis of Pricing Policies of Danish Manufac- turers</i> , by H. H. Hines	425
GROSSMANN, <i>Die Wirtschaftliche Entwicklung der Volksrepublik China</i> , by E. Lengyel	440
HANSEN, <i>Economic Issues of the 1960s</i> , by M. J. Ulmer	404
HARRIS, <i>Higher Education in the United States, the Economic Problems</i> , by E. W. Lawson	484
HAZLITT, ed., <i>The Critics of Keynesian Economics</i> , by D. Dillard	423
——, <i>What You Should Know About Inflation</i> , by H. L. Miller, Jr.	456
HIRSHLEIFER, DEHAVEN and MILLMAN, <i>Water Supply, Economic Technology and Policy</i> , by O. Eckstein	472
HOSEKLTZ, <i>Sociological Aspects of Economic Growth</i> , by E. E. Hagen	435
ISARD and ASSOC., <i>Methods of Regional Analysis: An Introduction to Regional Science</i> , by C. C. Bloom	431
ISLAM, <i>Foreign Capital and Economic Development: Japan, India, and Canada</i> , by D. McC. Wright	441
JOHANSEN, <i>A Multi-Sectoral Study of Economic Growth</i> , by A. S. Goldberger	436
JOHNSTON, <i>Statistical Cost Analysis</i> , by C. A. Smith	417
KAHN, <i>Personal Deductions in the Federal Income Tax</i> , by R. L. Slighton	463
KALDOR, <i>Essays on Value and Distribution</i> , by W. J. Baumol	409
——, <i>Essays on Economic Stability and Growth</i> , by W. J. Baumol	409
KARLIN, <i>Mathematical Methods and Theory in Games, Programming and Economics</i> . Vol. I, <i>Matrix Games, Programming and Mathematical Economics</i> ; Vol. II, <i>The Theory of Infinite Games</i> , by O. Morgenstern	406
KERR, DUNLOP, HARBISON and MYERS, <i>Industrialism and Industrial Man</i> , by N. W. Chamberlain	475
LAMBERT, <i>Les inflations sud-américaines: inflation de sous-développement et inflation de croissance</i> , by M. G. Myers	442
LANDAUER, <i>European Socialism: a History of Ideas and Movements from the Industrial Revolution to Hitler's Seizure of Power</i> , by M. H. Dobb	446
LEVIN, <i>Broadcast Regulation and Joint Ownership of Media</i> , by P. O. Steiner	471
LEVY, <i>Income Tax Exemptions</i> , by R. L. Slighton	463
MARTIN, <i>Mergers and the Clayton Act</i> , by J. B. Hendry	469
MEADE, <i>A Neo-Classical Theory of Economic Growth</i> , by Joan Robinson (a review article)	360
MEHTA, <i>Lectures on Modern Economic Theory</i> , by D. V. Plantz	408
MICHAL, <i>Central Planning in Czechoslovakia</i> , by P. J. Meier	454
NEUBAUER, <i>Finanzreform</i> , by J. Hauptmann	460
NORTON and JACOBY, <i>Bank Deposits and Legal Reserve Requirements</i> , by L. V. Conway	458
ROBINSON, <i>Collected Economic Papers, Vol. II</i> , by M. Bronfenbrenner	413
ROBINSON, ed., <i>Economic Consequences of the Size of Nations</i> , by G. H. Mattersdorff	467
SHONFIELD, <i>The Attack on World Poverty</i> , by J. D. DeForest	438
SIEGEL, <i>Aggregate Economics and Public Policy</i> , by J. W. Kendrick	430
SIEGEL and FOURAKER, <i>Bargaining and Group Decision Making: Experiments in Bi- lateral Monopoly</i> , by D. Ellsberg	420
SPENCER, <i>India: Mixed Enterprise and Western Business</i> , by D. Thorner	446
SPIEGELMAN, <i>Ensuring Medical Care for the Aged</i> , by W. Haber	485

STROTZ AND MALINVAUD, ed., <i>Econometrica</i> Essays in Honor of Ragnar Frisch, by M. Nerlove	402
SYLOS-LABINI, <i>Economie capitalistiche ed economia pianificata</i> , by B. Foa	451
TAYLOR, <i>A History of Economic Thought</i> , by G. J. Stigler	426
UHR, <i>Economic Doctrines of Knut Wicksell</i> , by J. F. Bell	427
VERNON, <i>Metropolis 1985: An Interpretation of the Findings of the New York Metropolitan Region Study; and Projection of a Metropolis: Technical Supplement</i> by B. R. Berman and others, by F. Shaw	433
WHETHAM, <i>The Economic Background to Agricultural Policy</i> , by E. Feder	474
Aspectos monetarios de las economías latinoamericanas, 1959, by H. G. Aubrey	461
Encyclopédie française. Vol. 9, <i>L'univers économique et social</i> , by J. Solterer	398
Population Redistribution and Economic Growth, United States, 1870-1950. Vol. I, <i>Methodological Considerations and Reference Tables</i> . Vol. II, <i>Analyses of Economic Change</i> , by M. S. Gordon	482

OTHER DEPARTMENTS

Titles of New Books	488
Periodicals	508
Notes	525

The American Economic Review

VOLUME LI

JUNE 1961

NUMBER THREE

THE SHORT CYCLE IN RESIDENTIAL CONSTRUCTION, 1946-59

By JACK M. GUTTENTAG*

Many of the important issues of housing policy that have arisen over the last decade focus on short-run instability in residential construction. Yet compared to the extensive literature on the long cycle in residential construction, the short cycle has been relatively neglected.¹ The purpose of this paper is to examine the determinants of short-run fluctuations in residential construction during the 1946-59 period.²

Part I explains how the short cycles are measured and describes some of their characteristics. Part II considers the relationship between fluctuations in residential construction and changes in the supply of mortgage credit. Many observers have noted that residential construction appears to be quite sensitive to credit conditions in the short run but little evidence for this relationship has yet been produced. In Part III the analysis is broadened to show the relationship between fluctuations in residential construction and in aggregate economic activity. Again, it has been widely noted that residential construction has had a generally stabilizing or countercyclical influence on the economy but no very adequate or complete explanation of this tendency has been provided.

* The author is chief, Domestic Research Division, Federal Reserve Bank of New York. The Bank, however, is not responsible for any of the views expressed. This paper is drawn in part from the writer's unpublished Ph.D. dissertation *Some Studies of the Post-World War II Residential Construction and Mortgage Markets*, Columbia University 1958. The writer is indebted to James W. Angell, Ernest Bloch, Leo Grebler and Robert Lindsay for helpful comments and suggestions.

¹ An early investigator of the short cycle was W. H. Newman [15]. More recently L. Grebler [6] [8] has intensively examined a relatively short period, and touched upon some of the issues raised in this paper.

² Space limitations preclude my bringing the findings of this paper to bear on housing policy issues.

I. Short Cycles in Residential Construction

A. Statistical Identification

The procedure used to identify "cycles" in residential construction activity is similar to that used by the National Bureau of Economic Research, except in one respect. Cycles in residential construction are defined here in terms of movements in three related series rather than only one; a movement is not recognized as "real" unless it is found in each of the series. In effect, this rule supplants the amplitude criterion used by the NBER to identify specific cycles.³ The three series are private nonfarm housing starts, nonfarm mortgage recordings of \$20,000 or less, and residential contract awards. In addition, for the period since late 1950 a series is available on FHA applications and VA appraisal requests.⁴ Each of these series, although covering an activity common to the other two (residential construction), is derived from an independent source and corrected independently for seasonal variation. This approach provides considerable assurance that the cycles identified are not the result of the erratic nature of the data or of faulty seasonal adjustment, but are ultimately explainable in terms of basic economic forces.

The most important activity not covered by all three series is the mortgaging of existing houses, which is included only in the mortgage recordings series. This activity generally accounts for more than half of the total volume of mortgage recordings. Nevertheless, there is a presumption that the volume of residential construction activity and the volume of mortgage activity will move in the same direction.⁵ As indicated later, this presumption appears justified for the postwar period, at least after 1948.

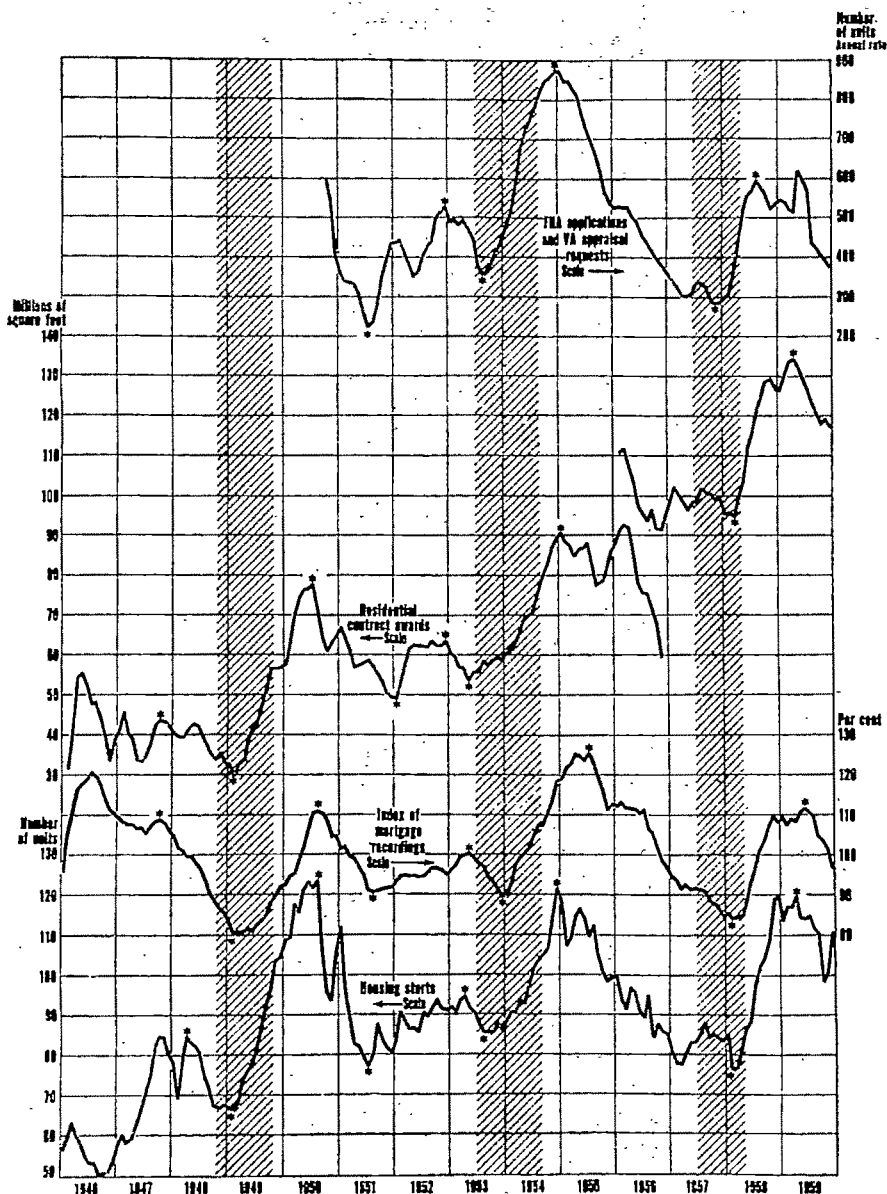
The first clearly identifiable turning point in the three series is in late

³ Burns and Mitchell describe their rule as follows [2, p. 58]: "The lower limit of the range of amplitudes of all fluctuations that we class confidently as specific cycles is our rough guide in deciding whether any doubtful fluctuation . . . is well enough defined to be accepted as a specific cycle." This rule is modified under certain conditions [2, pp. 138-39]. Reflecting the different procedure employed in this study, I have a contraction in 1953 which the NBER has not marked off in the residential awards series, while the dates of my turning points in this series diverge appreciably in a few instances from theirs.

⁴ With one exception these series measure physical volume. The recordings series measures value and is the only one adjusted for trend. Data on residential awards are published through the courtesy of F. W. Dodge Corp. The author will be happy to provide a complete description of these series, including coverage, turning points, and sources, to interested readers.

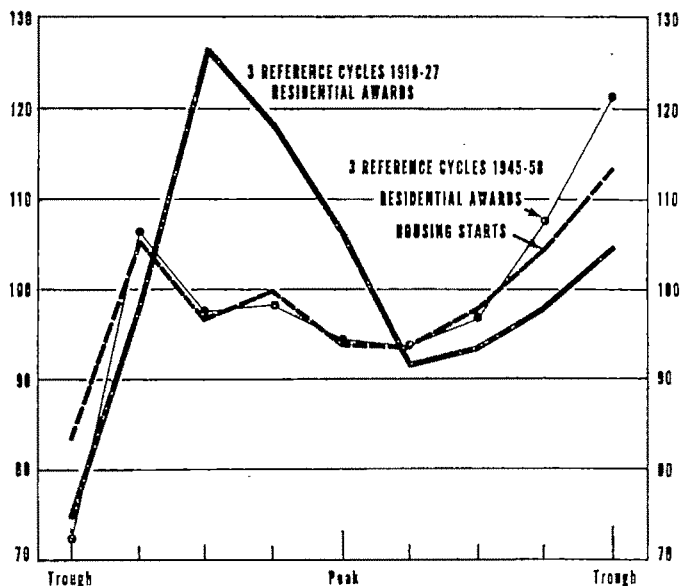
⁵ This is evident where the principal dynamic factor in the market is a change in the supply of mortgage credit. It is likely also to be the case when market changes originate on the demand side because (a) the relationship between the incremental demand for housing and the credit demand with which it is associated is very close in the short run, and (b) the mortgage credit demand that arises from sources independent of housing demand is relatively small, and part of it at least apparently is quite stable.

CHART 1. SELECTED SERIES ON RESIDENTIAL CONSTRUCTION AND MORTGAGE ACTIVITY, 1946-59



Note: Shaded areas represent reference contractions in general business as established by the National Bureau of Economic Research. Series are three-month averages except for housing starts. All series are seasonally adjusted.

CHART 2. AVERAGE REFERENCE CYCLE PATTERNS



1947 to early 1948 (Chart 1). Prior to that time, during 1946-47, the brevity and varying duration of movements in the several series make it impossible to relate them to one another with any degree of certainty. These statistical difficulties probably reflect the rather abnormal market conditions of these years. The construction industry was being re-constituted and materials shortages introduced an erratic element into construction activities. The several short movements hardly register in the recordings series, which was dominated during this period by an unusually active market for existing houses.⁶

During the period 1948 through 1959 there are four distinct periods of both expansion and decline in each of the three principal series (Chart 1). The turning points in each of the series can be related to one another with little difficulty since in most cases the timing discrepancies are small. The four complete cycles, measured peak to peak, have an average duration of 31 months in the awards series, 33 months in the starts series, and 35 months in the recordings series. None of the cycles, whether measured from peak to peak or trough to trough, is shorter than 16 months.

B. Evidence of a Countercyclical Tendency

A broad countercyclical tendency of residential construction during the 1948-59 period is evident in Chart 1. Construction declined dur-

⁶This was itself partly a reflection of the fact that new construction was limited.

ing the late stages of the expansions in general business that ended in late 1948 and mid-1953, and throughout most of the expansion running from late 1954 to late 1957. It rose throughout most of the two brief recessions in 1948-49 and 1953-54, and was a stabilizing influence during the 1957-58 recession.

Employing the familiar reference-cycle technique of the National Bureau of Economic Research, the countercyclical tendency is quite prominent (Chart 2). The average pattern for the three complete business cycles during 1945-58 is bowl-shaped after the stage of early recovery.⁷ This could be described, of course, as a tendency for residential construction to "lead" general business at turning points. The lead and lag terminology leaves open the question of whether the phenomenon described is purely statistical—the residential construction series, for example, might "lead" general business because they record construction at a relatively early stage in the construction process—or whether it is a reflection of how certain economic processes work themselves out over time.⁸

The behavior of the residential sector is here termed countercyclical because the explanation given below of the forces underlying fluctuations in construction appears to support use of this term. Countercyclical forces, however, because they take time to work themselves out, do not invariably produce countercyclical results (to employ Grebler's terminology [8]). That the three major expansions in construction extended into the stage of early recovery in general business reflects both the time-consuming nature of the countercyclical mechanism and the unusual brevity of the postwar recessions.

C. Postwar and Prewar Cycles

The short postwar cycles discussed in this study have a counterpart in the prewar period. Long [13] found 17 cycles in building between 1870 and 1938 averaging 4 years in length. Newman [15] counted 11 minor cycles between 1878 and 1933 having an average length of about 5 years. These cycles were based on building permit data which included commercial and industrial building as well as residential build-

⁷ The rise in construction during early recovery is considerably smaller when the 1945-49 cycle is omitted. Such omission could be justified in light of the abnormal situation in the construction market prior to 1948.

⁸ One hypothesis (other than the one presented in this paper) which can be used to explain fluctuations in construction and which would attribute causal significance to the "lead" is the familiar acceleration principle. The acceleration hypothesis does not however, for a number of reasons, provide an acceptable explanation for the observed tendency of residential construction to lead general business at turning points. One reason is that it is inconsistent with the evidence presented below that changes in demand were not strategic in the short construction cycles.

ing. Moore [14] found $5\frac{1}{2}$ cycles between 1919 and 1938 in the residential contract awards data.

The reference-cycle patterns for residential contract awards during the three short business cycles of the 1920's have similarities to those of the postwar period (Chart 2). As in the postwar period construction declined during the later stages of expansions in general business and began to rise some time during the recessions. During the 1920's, however, there was a much more pronounced procyclical rise during the recovery phase of the business cycle, while the rise during recessions was much weaker. Whether the pattern for the 1920's is counter-cyclical on balance is problematical, but such tendencies clearly were much less pronounced relative to procyclical tendencies than in the postwar period.⁹

Altogether different patterns show up during the two major business cycles covering the period 1927-38, as residential construction declined rather steadily during the entire 1927-33 cycle and fluctuated with unusual sharpness, largely in procyclical fashion, during 1933-38.

The performance of the residential sector in the postwar period has thus been substantially better than in the 1920's and 1930's. We cannot be sure of all the reasons for this because data are not available for a rigorous study of the causes of the prewar cycles. Nevertheless, some obvious points of difference between the prewar and postwar periods—the relatively more stable economy and the existence of the federal underwriting programs during the later period—must evidently have been of some importance. These structural differences will receive further comment below.

D. Short Cycles and Long Waves

The postwar cycles in residential construction may be placed in perspective by comparing them to the long waves in residential construction, which have been the subject of many investigations.¹⁰ First, and most conspicuously, the postwar cycles differ from the long cycles in their shorter duration. Measured from peak to peak in the starts series the four postwar cycles cover 20 months, 28 months, 32 months, and 52 months. The long cycles vary in length depending on the unit of measurement used and on the investigator, but their minimum length appears to be about 9 years and they may extend for as long as 25 years.

Second, the postwar cycles have a much smaller amplitude. The average amplitude of three long cycles during 1892-1950, as identi-

⁹ Also, the dispersion in the reference-cycle patterns of individual cycles was somewhat greater for the cycles of the 1920's than for the postwar cycles.

¹⁰ See: [1] [4] [12, Ch. 3] [3, Appendix N] [9, pp. 37-43] [5, Ch. 7] [13] [15] and [18].

fied by Grebler, Blank and Winnick [9], was about four times that of the four short postwar cycles. The amplitude of the mildest long cycle was roughly twice that of the most severe short cycle.¹¹ These relative orders of magnitude fully justify a characterization of the short postwar cycles as "ripples on the long waves."

Third, the short cycles differ from long cycles in their basic causes. Most of the standard explanations of long cycles in residential construction run in terms of fluctuations in the *demand*¹² for housing arising primarily out of changing rates of population growth. The influence of factors affecting the supply of mortgage credit may enter into the explanation but only as a secondary factor, intensifying the force of the movements of both expansion and contraction. In contrast, the short cycles appear to be related mainly to changes originating in the mortgage market. This has been true, at least, during the postwar period. In the prewar period income changes probably played an important role, particularly during major business cycles when such changes were especially large.

II. *The Short Cycle and Fluctuations in the Supply of Mortgage Credit*

The evidence on the central role of mortgage credit is indirect. Inferences are drawn about the principal factor underlying an observed movement in construction from the behavior of three market indicators, which will be discussed in turn. Each of these indicators is shown on Chart 3 along with the recordings series, which can be used to represent the movement of residential construction and mortgage activity.

A. *Construction and Mortgage Yields*

Where changes in demand are the chief determinant of changes in construction, we would expect mortgage yields and construction to move in the same direction; where changes in the supply of mortgage credit are the chief determinant, we would expect yields and construction to move in opposite directions.

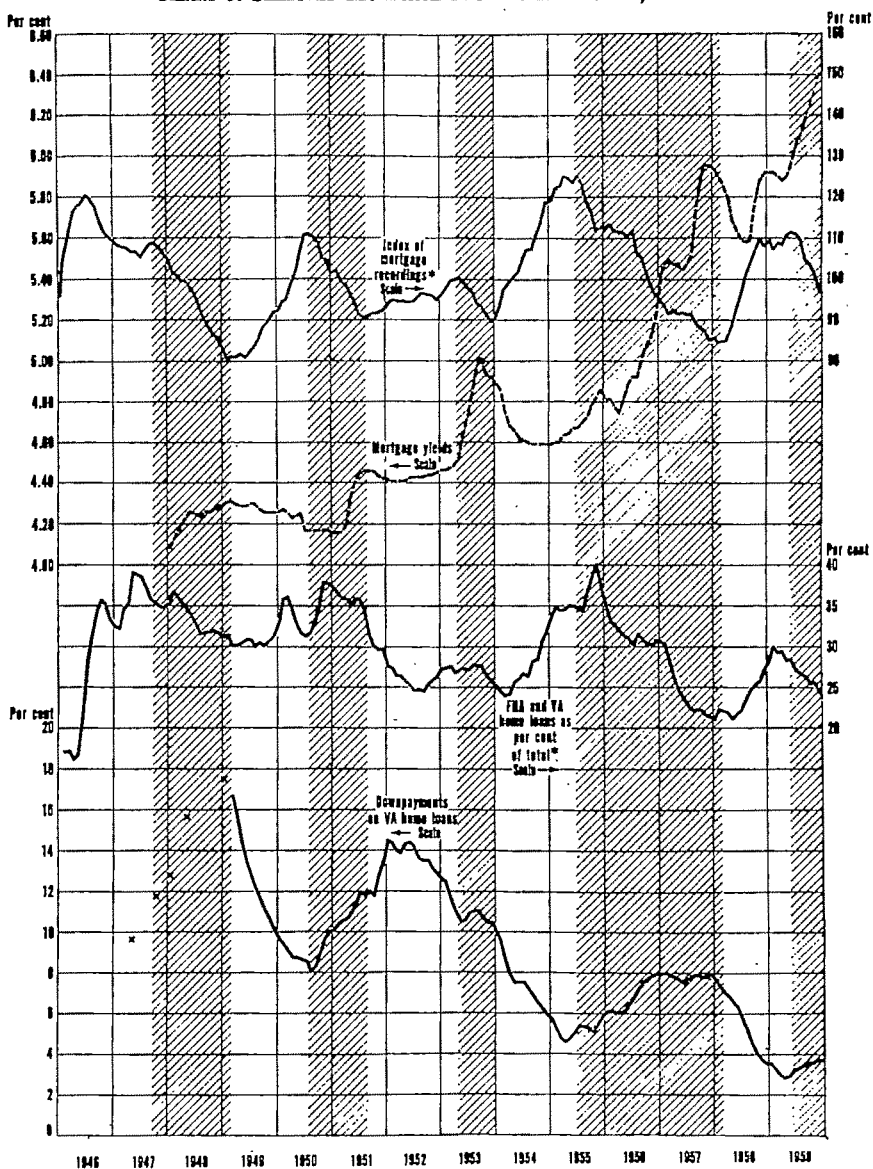
It is clear from Chart 3 that mortgage yields¹³ and residential con-

¹¹ Both the short and the long cycles in this comparison are measured in terms of private housing starts. The method of measuring amplitude is the same in each case except that yearly values are used for measuring the amplitude of long cycles and seasonally adjusted monthly values are used in the case of the short cycles. The method is that of the National Bureau, described in [9, p. 40].

¹² In this paper demand will be understood to refer to demand under given mortgage credit conditions, that is under given mortgage interest rates, discounts (when they are paid by the borrower), down payments, maturities, etc. This is sometimes called "basic demand." In a few places the broader concept is used where in mortgage credit conditions are also variable, as when speaking of the "sensitivity of demand" to changes in mortgage terms. Where this meaning is intended it will be obvious from the context.

¹³ The series on mortgage yields shown on Chart 3, which was constructed especially for

CHART 3. SELECTED MORTGAGE MARKET INDICATORS, 1946-59



Note: Shaded areas represent contractions in mortgage recordings. Series are three-month averages except for mortgage yields.

* Seasonally adjusted.

struction tended to move inversely to each other during the period 1948-59. The timing divergences at most of the turning points (peaks in one case and troughs in the other) are very small. An important exception is the 1950 peak in construction, the one turning point during the period that was caused (initially, at least) by "exogenous" developments—mainly the introduction of credit controls (Regulation X—see p. 288).

The significance of changes in mortgage yields (relative to changes in construction) as an *indicator* of whether supply or demand is the chief influence in the market should be distinguished from the *function* performed by yield changes in maintaining market equilibrium. Of course, changes in yields would not serve as an indicator unless such changes also helped to equilibrate the market. It is not necessarily the case, however, that yield changes will bear the brunt of the equilibrating process, especially in influencing the demand for credit. In rationing funds to borrowers, changes in other lending terms, and particularly in the down-payment requirement, probably are as important as, and possibly more important than, changes in rates.

B. *Construction and Mortgage Terms*

Changes in mortgage terms themselves constitute an indicator of the principal factors underlying changes in residential construction. Both the supply and demand for mortgage credit are functionally related to mortgage terms. Furthermore, when the supply of credit is a positive function of a given condition of the loan, the demand will be a negative function, and vice versa. The general reason for this is that any change in terms that makes it easier for borrowers with given qualifications to obtain more credit, *ceteris paribus* also increases risk to the lender. For example, the demand for credit is a negative function of the down payment because of the existence of marginal borrowers for whom the down-payment requirement represents an effective constraint on borrowing and spending; the more they can borrow on their existing equity or liquid assets the more they will spend. The supply of credit, on the other hand, is a positive function of the down payment, since the larger the borrower's own investment or equity relative to his bor-

this study, is based on the prices at which completed FHA home mortgages are traded in the secondary market. For several reasons the series does not measure very precisely the rate of return that can be earned by investors at any given time, or the rate that borrowers must pay for credit; neither does this series represent the average yield over the entire mortgage market, since secondary market transactions, the volume of which is very small relative to the total volume of mortgages written, are atypical. Hence, little significance can be attached to the yield *levels* indicated by the series. However the series does constitute a fairly sensitive indicator of *changes* in borrower costs and investor returns over the entire market.

rowed funds, the less the risk that adverse circumstances will wipe out this equity and lead to default.¹⁴

Hence, within certain institutionally established limits, we can consider the interaction of demand and supply as determining a set of terms just as it determines an interest rate; at the same time, we can draw inferences as to the nature of the principal dynamic factor underlying a movement in construction from the associated changes in terms. Where a change in demand constitutes the chief factor underlying a change in construction, we would expect an increase in construction to be associated with a restriction of terms. Where a change in the supply of mortgage credit is the chief dynamic factor we would expect an increase in construction to be associated with a liberalization in terms.¹⁵

Statistics on mortgage terms are sometimes difficult to interpret because they may be influenced by changes in the maximum terms allowed by law or regulation, as well as by changes in the demand or supply of credit. In the case of VA mortgages, however, except for the period 1950-53, the down payment required by law or regulation was either a uniform 2 per cent or nothing at all.¹⁶ Changes in actual down payments reflected almost entirely the influence of market forces and there was ample scope for the play of such forces. A series on actual VA down payments on new houses is shown on Chart 3.

The chart shows that VA down payments tended to move in the direction opposite to recordings during the declines in residential construction of 1948-49 and 1955-57, as well as during the expansions of 1949-50, 1954-55, and 1958-59. (During 1950-53, the series is influenced by the imposition and subsequent relaxation of credit controls.) This evidence supports the thesis that changes in the supply of mortgage credit were the principal dynamic factor underlying the changes in activity. It also suggests, when considered in conjunction with the evidence on mortgage yields, that there may well be considerable variation as between different cycles or phases of cycles, in the relative importance of yield changes and down-payment changes in rationing

¹⁴ These points are discussed further in [10].

¹⁵ Note that these implications follow only if it can be assumed that changes in demand or supply are not associated with a marked re-evaluation of lenders' attitudes toward the riskiness of mortgages. Ordinarily, for example, a decline in demand would lead to a liberalization of terms (as well as a decline in interest rates). However, if the decline in demand suggests to lenders that borrowers are not as good credit risks as before or that property values may decline, the result may be a restriction of terms rather than a liberalization; this is the paradox where "money gets easy but lenders get tight." It is doubtful that any sharp revision of attitudes occurred during the period covered by this study, since fluctuations in general business were mild and the mortgage repayment experience of lenders was generally very favorable.

¹⁶ A 2 per cent down-payment requirement was imposed in July 1955 and removed in April 1958.

credit. Thus, the sharp rise in construction that began early in 1949 was associated in the early stages with only a leveling off of yields and with only a very modest decline (less than one-fifth of a percentage point) over the entire period of expansion. However, down payments declined sharply throughout 1949, and when the 1950 peak in construction was reached the average had fallen to 8 per cent, from about 17 per cent in early 1949.¹⁷ On the other hand, during the 1955-57 period of decline, VA down payments increased only modestly but yields increased by more than $1\frac{1}{4}$ percentage points.

C. Construction and the Relative Importance of the Federally Underwritten Sector

Another important clue as to the nature of the forces underlying fluctuations in the level of residential construction is provided by the relationship between such fluctuations and changes in the relative importance of the federally underwritten sector of the market. Where supply-of-credit factors are the chief dynamic influence in the market, we expect changes in residential construction and in the relative importance of federally underwritten mortgages to be in the same direction. There are two broadly different reasons for this.

First, to some extent the federally underwritten and conventional sectors of the market overlap, in the sense that borrowers' demands can be met under either form of financing. Where this is the case, switching occurs between the two sectors in response to market changes. For example, assuming an increase in demand occurs, it is profitable for lenders to switch from federally underwritten to conventional financing. Higher rates can now be obtained on conventional mortgages, whereas the maximum interest rate which can be charged on federally underwritten mortgages is fixed by law or regulation (we are assuming, what was generally the case, that this interest rate ceiling is an effective constraint on the rate charged). In addition, with a stronger demand, lending terms can be tightened so that less risky mortgages are obtained, with the result that the insurance or guarantee feature is less valuable than it had been.

Second, the federally underwritten sector is partially segmented from the conventional sector, in the sense that the credit demands of some borrowers can be satisfied only at the more liberal terms available under the federal programs. The ebb and flow of these "marginal" borrowers into and out of the market is controlled mainly by changes in the market terms on FHA and VA mortgages.¹⁸ Thus when the sup-

¹⁷ In the case of existing houses the decline was somewhat smaller.

¹⁸ The VA program is particularly important in this connection because, as already suggested, during most of the period covered by this study no down payment was required of

ply of funds that lenders wish to invest in mortgages increases, terms on FHA and particularly on VA mortgages are eased and the relative importance of these programs in the total rises.¹⁹

As indicated in Chart 3, the relative importance of the federal programs (as measured by the ratio of federally underwritten home loans to total recordings) varied generally in the same direction as residential construction, although the correspondence between the series is somewhat disrupted by credit controls during the period 1950-53. The same general correspondence appears in the housing starts data beginning in 1951 (when monthly data for federally underwritten starts first became available), and in the nonfarm mortgage acquisitions of life insurance companies. Changes in legislation affecting the federal programs as well as in the regulations of the federal agencies played some role, but with the exception of the 1950-53 period, movements in this indicator appear to reflect the overriding influence of swings in the supply of mortgage credit.

D. *Why the Supply of Mortgage Credit is Strategic*

The reason for the strategic role of mortgage credit in the short cycle is not far to seek. Demographic factors and the relative price of housing, which must be crucially important determinants of housing demand and construction in the long run, ordinarily do not change very much in the short run. The demand for housing, moreover, apparently is not very sensitive to short-run changes in income, so long as such changes are fairly moderate and do not generate sharp swings in consumers' expectations. Decisions to vary housing expenditures are not made lightly since they involve a commitment of substantial magnitude generally extending well into the future. Such decisions are likely to be related to what home buyers consider will be their income over a fairly long period.²⁰

veteran borrowers by law or regulation. This provided ample scope for lenders to adjust the down payment they required on these mortgages in accordance with their changing appetite for mortgages relative to other investments. This has been one important factor underlying the great volatility of VA mortgage lending.

¹⁹ The relationship between changes in the supply and demand for credit and changes in the relative importance of the federally underwritten sector holds irrespective of whether or not a change in demand is associated with a change in lenders' attitudes toward the riskiness of mortgages. In the case where demand increases, for example, if lenders are encouraged by this development to believe that mortgages are less risky than they had been, this will have the effect of further encouraging them to shift out of federally underwritten mortgages.

²⁰ Calculated estimates of the income elasticity of housing demand that I have seen range quite widely, from .3 to 2.0 and even higher. Margaret Reid [17] suggests that the coefficient relevant to "permanent" income is close to the higher figure, while the much lower coefficients sometimes found reflect the influence of transitory changes in income on the income concept employed.

At the same time housing demand is extremely sensitive to changes in the supply of mortgage credit. It is estimated that on the average about three-fourths of total expenditures on residential construction during the 1948-59 period was financed with mortgage loans. It is this greater sensitivity of housing demand to changes in the supply of mortgage credit than to changes in the flow of current income, and the considerable short-run volatility in the former, that underlie the counter-cyclical tendency of residential construction. Before analyzing the process in more detail, however, several factors are noted in addition to the supply of credit that exercised a marginal influence on the short construction cycle during the period covered by this study.

E. Other Influences on Construction in the Short Run

Demand. It is unlikely that the volume of new construction demanded per month under given credit conditions did not change over the 1948-59 period, but in the short run such changes were apparently small relative to changes that resulted from swings in the supply of mortgage credit. I have not been able to find any significant relationships between the short cycles and such factors as house prices, income and employment, marriages, household formation, etc., which it is reasonable to assume are related to housing demand.²¹ These factors, of course, must have been important determinants of the general level of construction around which the short cycles took place.

Changes in Maximum Allowable Lending Terms on FHA and VA Mortgages. Liberalization of maximum lending terms (down payments and maturities) can be effective in expanding the volume of mortgage lending and construction if the supply of mortgage credit exceeds the demand at existing maximum terms. Terms were liberalized on a number of occasions during the 1948-59 period, but since most of these changes came during periods of relative tightness in the mortgage market they had little immediate effect.²² This was true, for example, of the liberalization of mortgage terms on FHA mortgages in 1948, on both FHA and VA mortgages in 1951 and 1952 (the relaxation of Regulation X), and on FHA mortgages in 1957. On each of these occasions the new more liberal maximum terms did become effective at a later time when an increase in the supply of mortgage credit caused an easing in the market, but the change in supply during such periods was the more important factor in the easing of actual terms to borrowers.²³

²¹ In itself, this cannot be considered conclusive because of inadequacies in the basic data. Indeed, this was why recourse was had to market indicators.

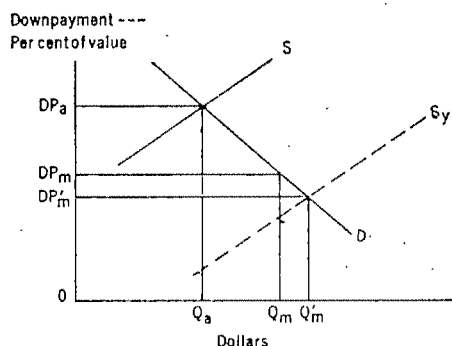
²² This was not altogether fortuitous, since the pressure to "do something for housing" usually was greatest during such periods.

²³ This may be illustrated as follows: Assume that the supply of mortgage credit is an

On the other hand, liberalizations during the years 1946 and 1947 (which lie outside the bounds of our cyclical analysis) were an altogether different matter. The supply of mortgage credit in those years was substantially in excess of the demand at existing maximum terms, partly because of the superfluity of liquidity possessed by lending institutions and partly because of certain restrictive aspects of the federal programs at that time. When these restrictions were removed, it was as if a dam had burst, although because of capacity limitations, the impact was more on prices than on output.²⁴

Maximum allowable lending terms on federally underwritten mortgages were restricted on only two occasions during 1948-59.²⁵ In late 1955 there was a minor restriction which had little or no impact because the market had already tightened beyond it. The other restriction occurred in 1950, first in July on FHA and VA mortgages only, and then with even greater severity in October under Regulation X, which

increasing function of the down payment (measured as a per cent of value), and that the interest rate is fixed. Initially, when the market is tight, the down payment prevailing in the market is DP_a , or higher than the minimum of DP_m . Under these conditions, a reduction in the minimum to DP'_m has no effect on the market. When S shifts to S_y , however, the new lower minimum becomes effective. If the minimum had not been reduced, the down payment would have fallen only to the old minimum DP_m , where there would have been an excess supply. Even so, the supply of mortgage credit rather than the change in the minimum down payment is the more important factor in the situation pictured, since only a relatively small part of the total increase in credit ($Q'_m - Q_m$ or $Q'_m - Q_a$) can be attributed to the change in the minimum.



²⁴ This can be illustrated in the diagram above by assuming that initially the supply function is S_y while DP_a is the minimum down payment so that the minimum is the strategic restraint on mortgage lending. When this minimum is reduced to DP_m , the volume of credit increases substantially (by $Q_m - Q_a$). For a further discussion of the tremendous impact of the early postwar changes in the FHA and VA programs see [7].

²⁵ Over the entire period, these restrictions were more than offset by liberalizations. In early 1960, therefore, average down payments on FHA and VA mortgages were lower, and maturities were longer than they had ever been before. Some observers were drawing pessimistic inferences concerning the prospects for a continuation of housing's countercyclical role from this fact (see my concluding remarks below).

applied to conventional mortgages as well. Regulation X and its companion restrictions appear to have been largely responsible for the 1950 downturn in residential construction, and hence represent the one exogenous development during the 1948-59 period that was a strategic factor in a short cycle.²⁶ Even in this case, during the later stages of the decline the effects of the restriction became inextricably intertwined with the effect of the declining supply of mortgage credit that followed the March 1951 accord between the Federal Reserve System and the Treasury. Hence, Regulation X was only partly responsible for the 1950-51 contraction in residential construction.

The Federal National Mortgage Association (FNMA). The tendency inherent in FNMA's secondary mortgage market operations (consisting of the purchase and sale of FHA and VA mortgages) during the 1948-59 period was to mitigate fluctuations in residential construction activity. The basic reason for this was the Association maintained fixed or "sticky" mortgage purchase prices.²⁷ Hence, FNMA's mortgage holdings rose most rapidly during periods of declining construction and falling mortgage prices and least rapidly during periods of rising construction and mortgage prices. Since construction tended to move inversely to general business, this meant that FNMA made the residential construction sector less of a stabilizing influence on the economy as a whole than it would have been otherwise.

FNMA's "natural" tendency to stabilize the mortgage market was,

²⁶ There has been some reluctance to attribute any great efficacy to Regulation X because of the known heavy volume of forward commitments on pre-Regulation X terms that was built up prior to the effective date of the regulation. It has been generally assumed [16] that because of these commitments the impact of the regulation must have been both delayed and diluted. But this view overlooks the following: (a) the fact that there is a stock of outstanding commitments which will permit, say, x months of construction to go forward without being subject to the regulation does not mean (as many observers imply) that there must be a delay of x months before construction is effected. Such a view is unrealistic in assuming that builders will maintain their operations at existing levels until their commitments run out, and then will reduce volume sharply. One of the main problems of builders is finding and holding a cadre of skilled workers, and they usually will go to great lengths to maintain continuity of employment for these workers. A more realistic view of builders' response to controls, therefore, is that they will curtail construction immediately by laying off the most recent additions to the work crew and by reducing overtime; in this way they can husband their commitments and stretch out employment for their basic work force. (b) The July 1950 regulation, a sort of prelude to the more comprehensive restriction imposed in October, must have had considerable impact on the market. This restriction came without any warning and hence without any prior build-up of commitments. Furthermore, by eliminating no-down-payment loans under the VA program, this restriction struck a most sensitive nerve, since these loans had come to account for about three-fifths of all VA primary home loans on new homes at the peak of the 1949-1950 housing boom.

²⁷ Until late 1954 it was FNMA's policy to purchase all mortgages at par. The Housing Act of 1954, effective late that year, stipulated that mortgages acquired under FNMA's principal program be purchased at market prices. Even so, in subsequent years the Association tended to lag well behind the market in adjusting prices.

however, disrupted on several occasions by changes in the framework of law and regulations within which it operated. Thus special legislation which became effective during the expansion of 1949-50 when construction and mortgage credit from private sources were rising rapidly, provided an added fillip to FNMA's purchases. Similarly, special legislation enacted during the 1958 recession resulted in \$1 billion of purchases at above-market prices as a form of "special assistance," more than offsetting sales that were being made (as a result of the general decline in interest rates) under FNMA's regular secondary market operations.

FNMA's influence on the market was of some marginal importance on several occasions. When FNMA's expansionary stimulus was at its peak (in 1949, 1957 and 1959), the Association accounted for about one-tenth of the total net flow into residential mortgages; in most other years, however, its share was considerably smaller.

Rigid Interest Rates on FHA and VA Mortgages. The existence of fixed maximum interest rates on federally underwritten mortgages (set by law or by the federal credit agencies within the authority granted by law), which were usually at or below the market equilibrium rate, probably intensified somewhat the countercyclical tendency of the residential sector. As general interest rates rose during a period of expansion, the inability of lenders to obtain a higher contract rate on federally underwritten mortgages caused the diversion of credit to other sectors to be greater than it would have been otherwise. This tendency was only partly offset by the practice of "discounting" federally underwritten mortgages. And, of course, during a period of contraction the reverse process occurred. The writer's view, however, is that the rate maxima have been emphasized far out of proportion to their real importance. The countercyclical process can be explained quite well, as we shall see, without any reference to them at all.

That the "dial settings" for maximum allowable interest rates or lending terms under the federal underwriting programs were not, in general, strategic in influencing the short construction cycles does not mean that the programs were unimportant. On the contrary, the general availability of FHA insurance or guarantees to lenders when they needed them was an important factor making countercyclical variations in mortgage lending feasible without undue changes in risk exposure.

III. *The Countercyclical Tendency of Residential Construction*

Returning now to our main theme, that changes in the level of residential construction resulted principally from fluctuations in the supply of mortgage credit, what was the cause of these changes in supply?

The thesis advanced here is that changes in the supply of mortgage credit were related in large part to changes in the level of general economic activity, so that fluctuations in residential construction resulted from fluctuations in general economic activity.

Thus, the residential sector in the short run assumed a largely passive role in economic fluctuations as opposed to its more autonomous role in the long run. But precisely because the relationship between the residential sector and the general economy was mediated chiefly by the supply of mortgage credit rather than by the flow of current income, this passivity was of an "inverse" sort. The usual picture of a cyclical expansion or contraction is one of a cumulative process with expansion in one sector leading to expansion in other sectors. In the case we are considering, changes in general business activity set in motion forces leading to movements in the *reverse* direction in construction. Consider the following schematic illustration.

Assume that an expansion in general business occurs, initiated we may suppose by an upsurge in corporate investment. In the early stages of the expansion, the additional demands made upon the capital markets may be small since the corporations have excess liquidity and retained profits are likely to be large. If the expansion follows a period of recession, credit demands will be met with no difficulty and little, if any, increase in interest rates. As expansion develops and spreads, however, the demands upon the capital markets are enlarged, liquidity positions generally are eroded and as capacity ceilings are approached Federal Reserve policy shifts from ease to restraint; interest rates rise and borrowing terms tighten.

Of course, the expansion in general economic activity leads to an increase in disposable income, but the demand for housing is expanded only slightly as a result. At the same time the demand for housing is extremely sensitive to the terms on which mortgage credit is available. After a certain stage of tightness is reached in the capital market, therefore, the reduction in housing demand consequent upon the tightening of credit more than offsets the expansion in demand resulting from the increasing flow of income. While most sectors continue to expand, residential construction turns down.

During a contraction the reverse process occurs. After some point, the easing of credit terms consequent upon a decline in the demand for credit from other sectors (and the easing of monetary policy) has an expansionary effect on housing demand sufficient to offset the effect of the decline in income. Hence, residential construction turns up while other sectors continue to decline. In this way does the residential construction sector act as a sort of countercyclical buffer.

A. *Dynamic Role of the Corporations*

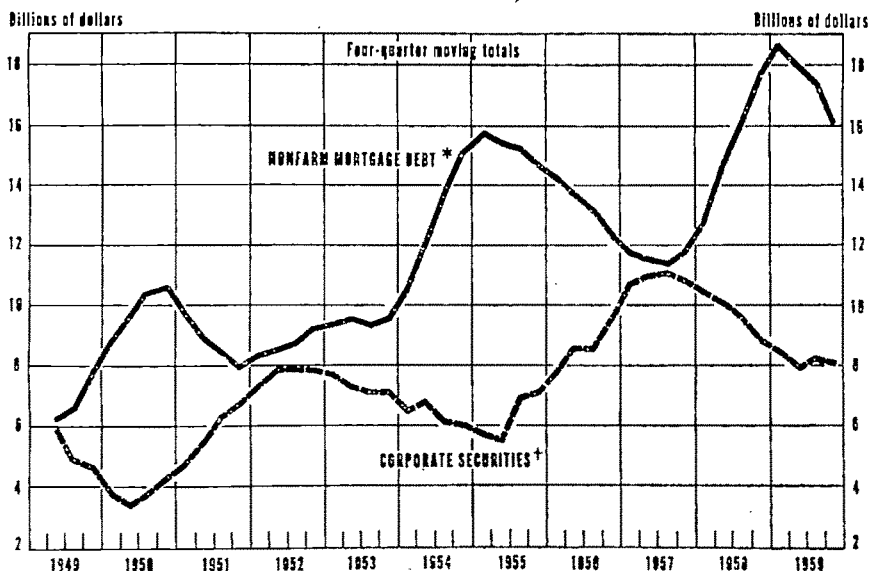
It would appear that there are two basic considerations involved in the process. The first, already discussed, is the unusual sensitivity of the residential sector in the short run to changes in the supply of credit. The second is that the tendency towards economic expansion or contraction is initiated outside of the residential construction sector. This deserves further comment.

In the schematic illustration offered above, the dynamic impetus to economic fluctuations is provided by the corporations. This is a *prima facie* plausible hypothesis since corporations account for a large proportion of investment spending, generally considered to be the key factor in economic fluctuations. During the 1948-59 period, corporations accounted for about three-fifths of gross private domestic investment (excluding nonfarm residential construction).

The hypothesis implies that corporate investment has quite different characteristics than spending on residential construction (these differences are associated in part with the characteristics of the spenders). The key differences are that corporate investment is (a) more volatile, and (b) less sensitive to changes in the interest rate and less subject to noninterest rate rationing. Thus, when corporate investment demands increase, the associated demands on the capital markets raise interest rates and tighten credit, but the rebound effect of this tightening on the corporations themselves is slight. Potential home buyers, on the other hand, faced with the need to pay higher rates and to make larger down payments, are forced to curtail their expenditures on housing and their mortgage borrowing. Putting the matter crudely, the volume of mortgage credit is a sort of residual, in that home buyers can obtain only that volume of credit which remains after the more volatile and persistent demands of corporations have been satisfied. Although this conclusion must be qualified in several respects, it appears to be basically correct and provides a reasonable explanation for the observed behavior of the residential construction sector during the postwar period.

Some support for this explanation is provided by Chart 4, which shows movements in the net increment to mortgage debt and to corporate securities (including equities) outstanding. The two series shown are virtually mirror images of each other. We can reject out of hand the possibility that demands for investable funds by corporations and by mortgage borrowers are subject to independent influences which happen to be opposite in their effects. The chart suggests instead an organic interconnection between the processes of financing corporations through security issues and financing home purchasers through the creation of mortgage debt. Moreover, the possible causal relations underlying this interconnection are not unlimited. Possibly one type of

CHART 4. NET CHANGE IN NONFARM MORTGAGE DEBT AND IN TOTAL CORPORATE SECURITIES OUTSTANDING, 1949-59



* Centered at second quarter.

† Centered at third quarter.

demand was more volatile than the other; a second possibility is that the demands were equally volatile but that there were sharp differences in the respective interest rate elasticities (or in the degree to which they were subject to noninterest rate rationing). As already indicated, I believe that both were the case.

B. Role of the Federal Government and the Banking System

How does the federal government fit into this explanation? The characteristics of corporations noted above, which were said to underlie the dynamic character of corporate spending (as compared to the passive character of residential spending) seem to apply even more to the federal government. The credit demands of the government appear to be more volatile than those of the corporations, for example, while the government's credit demands are interest-rate inelastic in the extreme and not to be put off by noninterest rate credit rationing.

As soon as the government is added to our model, it becomes necessary to take into account as well the third dynamic or volatile sector of the economy, namely, the commercial banking system. Broadly, it appears that fluctuations in bank credit tend to offset fluctuations in government borrowing, leaving corporate demands as a sort of residual prime mover in the capital markets. This is not because the monetary

authorities are at the beck and call of the Treasury. Rather it reflects the manner in which both government borrowing and Federal Reserve policy are related to the business cycle. During a recession, for example, borrowing by the government increases as receipts from tax payments fall off and expenditures rise. The monetary authorities, following a policy of credit ease designed to cushion the force of the recession and pave the way for recovery, do not allow these heavier borrowing needs by the government to tighten the market. The expansion of bank credit thus offsets the government's increased credit demands. The process may be quite direct, as when the Treasury floats a large cash offering and the Federal Reserve provides the banks with the reserves needed to acquire the new securities without any tightening in their reserve positions. The result is that the recession-induced relaxation of credit demands by corporations has the desired effect of releasing funds for mortgages, as explained above.

During an expansion the reverse process occurs. As government revenues increase, its borrowing requirements tend to fall but because of the policy of restraint followed by the Federal Reserve System this does not have the effect of easing the capital markets. The increasing credit demands of the corporations are thus allowed to tighten the market and draw funds from the mortgage market. Thus, the usual adaptation of monetary policies to the business cycle has the effect of allowing the normal interaction between the corporate and residential construction sectors to proceed without interference from the fluctuating credit demands of the Treasury.

The recession of 1957-58 is a particularly striking example of this because the credit demands of the government rose so sharply as to completely offset the decline in corporate demands. Comparing the year ending June 30, 1958, which roughly demarcates the recession, with the previous year of expansion, external financing by corporations fell from \$14 billion to \$7 billion, or by \$7 billion²⁸ while net government demands rose by \$9 billion.²⁹ Nevertheless, market conditions eased, as commercial bank credit rose by an unprecedented (for peacetime) \$14 billion—\$9 billion more than in the previous year.

C. *Some Preconditions*

It seems clear that the tendency of the residential construction sector to act in countercyclical fashion involves some basic preconditions. In-

²⁸ External financing is defined as the net increase in stocks and bonds, mortgage debt, bank loans and federal income tax liabilities plus net reduction in government securities holdings. If income tax liabilities are excluded, external financing declined by less than \$5 billion.

²⁹ From debt redemption of about \$3 billion to an increase in debt of about \$6 billion.

deed, the much better performance of the sector in the postwar than in the prewar period can be largely explained in terms of these conditions.

The first condition is that fluctuations in general economic activity be limited, particularly contractions. The increases in the supply of mortgage credit during postwar business recessions had a greater effect in expanding housing demand than the reduced flow of income had in curtailing this demand partly because the reductions in income were small and the confidence of consumers was not significantly affected. However, the amount of ease that can be introduced into the mortgage market is limited by legal and institutional factors; the expansionary effect of easy credit, at the limit, can be largely offset or even swamped by substantial declines in income, such as those experienced in major prewar contractions.

Moreover, when the level of general economic activity declines beyond some point, the supply of mortgage credit may actually begin to tighten rather than easing further, as lenders become apprehensive with respect to the future economic status of borrowers and mortgage loans begin to appear more risky than before. Although lenders under such conditions might have more loanable funds than previously, they would be less inclined to lend. This would be reflected in a greater restrictiveness in lending terms, although interest rates on prime securities probably would continue to decline.⁸⁰

This leads to a second precondition, namely, that lenders are able to make sharp countercyclical variations in their mortgage lending without undergoing large changes in risk exposure. Two possible sources of a change in risk exposure have been noted in this paper. Reference has just been made to a shift in lenders' evaluations of the risks associated with loans of given characteristics (given type of security, lending terms, etc.). Such changes probably are quite small in a relatively stable economic environment such as we have had in the postwar period. The impact of any re-evaluations of risk that have occurred has been minimized by the federal underwriting programs, although undoubtedly, from this standpoint, these programs have not been very badly needed in the postwar period.

Risk exposure can also change as a result of a shift in the loan mix, for example, toward loans with smaller down payments. Such changes are, indeed, an integral part of countercyclical shifts in mortgage lending. If lenders are to push out more credit during a recession, for example, when basic housing demand is, if anything, weakening, they must stimulate demand by standing ready to make more liberal loans. Here the importance of the federal underwriting programs becomes

⁸⁰ This is the paradox referred to above where "money gets easy but lenders get tight."

evident. Credit terms can be liberalized and demand stimulated, without any appreciable increase in risk exposure, by shifting into federally under-written loans. In the absence of such programs credit liberalization may be hampered, either because lenders are unwilling to court the added risk exposure, or are unwilling to do so without a compensating rise in rate (which can be quite large), or are unable to do so because they are already making most loans at the conservative maximum limits established by law for conventional loans. Thus the federal underwriting programs have been an important structural factor facilitating the countercyclical tendency of the residential sector during the postwar period.

D. Tight Money Before the Accord?

It may appear surprising that a decline in the supply of mortgage credit could have been responsible for the 1948-49 decline in residential construction. Since lending institutions at that time held very substantial amounts of government securities and the Federal Reserve System was supporting the government bond market, how could there have been a contraction of mortgage credit?

The celebrated accord between the Federal Reserve System and the Treasury in March 1951 has tended to overshadow certain important developments in prior years. These developments, which in themselves constituted partial steps back to an effective monetary policy, in a sense prepared the way for the accord, and influenced the mortgage market as early as the second half of 1947. During that period and again in the latter part of 1948, short-term interest rates were allowed by the Federal Reserve System to rise substantially from unusually low wartime levels. The banks appeared to be the only type of financial institution significantly affected by these moves, and their main response to rising short-term yields was to withdraw temporarily from the mortgage market. Between 1947 and 1949 net mortgage acquisitions by commercial banks fell by two-thirds.³¹ Since the banks had helped create a climate of extreme ease in the mortgage market in 1946 and early 1947 by aggressively competing for mortgages, their sudden withdrawal from the market had a considerable impact.

The 1948 decline in mortgage credit and residential construction thus resulted from the earliest and mildest of the measures designed to restore the central bank's control over the money supply. This was an unusual instance of developments in the market for short-term instruments of high liquidity directly and seriously influencing the market

³¹ Subsequently, the banks re-entered the mortgage market to help spark the 1949-50 expansion.

for long-term instruments of relatively low liquidity. The connecting link, of course, was the portfolio adjustment of the commercial banks, and the fact that the banks had been unusually active in the mortgage market in prior years.

IV. *Future Prospects*

Will the countercyclical mechanism described above continue to operate in the future? It is not the case, as some have argued, that the process will necessarily come to an end as a result of the gradual weakening of basic housing demand relative to the total housing stock—a result of unfavorable demographic factors over the 1950-60 decade, conjoined with the very substantial additions to the stock during this period. Even if this development presages a decline in the average level of construction, which is by no means certain, credit-induced fluctuations (possibly of reduced absolute magnitude, to be sure) might well occur around this lower level.

Nor does the upward ratcheting of mortgage credit terms on FHA and VA mortgages over the period since the second world war, referred to earlier, limit the scope for easing of credit in the future. Liberalization of credit involves not only a relaxation of terms on FHA and VA mortgages but, possibly of more importance, a greater availability of these mortgages. Each period of credit ease has been accompanied by a rise in the relative importance of FHA and VA mortgages in the total. There has not, however, been an upward trend in this ratio over the 1948-59 period as a whole, and in early 1960 the ratio was lower than during most of the period (see Chart 3).

More germane to future prospects is our assessment of the possibility that fluctuations in general business will be more severe in the future than they were in the 1948-59 period. To be sure the federal underwriting programs will continue to minimize any disruptive swings in risk exposure that could otherwise result from more severe fluctuations in general business. But large procyclical swings in income could still swamp the effects of countercyclical variations in the supply of mortgage credit.

As a further possibility, the intricate mechanism through which business fluctuations generate countercyclical swings in the supply of mortgage credit might develop kinks at one point or another. The time series in Chart 1, for example, suggest the hypothesis that the response of housing to easy credit may be coming progressively later during recessions. This hypothesis warrants careful study, directed at the portfolio responses at crucial junctures of the major types of mortgage lenders (has this response been influenced by the secular erosion of

their liquidity positions during the postwar period?); at the timing of governmental policy actions relative to the business cycle; and at the changing structure of housing demand.

REFERENCES

1. A. F. BURNS, "Long Cycles in Residential Construction," *Economic Essays in Honor of Wesley C. Mitchell*. New York 1935.
2. A. F. BURNS AND W. C. MITCHELL, *Measuring Business Cycles*. Nat. Bur. Econ. Research, New York 1947.
3. M. L. COLEMAN AND R. NEWCOMB, *Stabilizing Construction: The Record and Potential*. New York 1952.
4. J. B. D. DERKSEN, "Long Cycles in Residential Building," *Econometrica*, 1940, 8, 97-116.
5. J. DUESENBERY, *Business Cycles and Economic Growth*. New York 1958.
6. L. GREBLER, *Housing Issues in Economic Stabilization Policy*. Nat. Bur. Econ. Res. Occas. Paper 72, New York 1960.
7. ———, "Stabilizing Residential Construction—A Review of the Postwar Test," *Am. Econ. Rev.*, Sept. 1949, 39, 898-910.
8. ———, "The Role of Residential Capital Formation in Postwar Business Cycles," *Conference on Savings and Residential Financing*, 1959 Proc., U. S. Savings and Loan League, pp. 57-85.
9. L. GREBLER, D. M. BLANK, AND L. WINNICK, *Capital Formation in Residential Real Estate: Trends and Prospects*. Princeton 1956.
10. J. M. GUTTENTAG, "Credit Availability, Interest Rates and Monetary Policy," *So. Econ. Jour.*, Jan. 1960, 26, 219-28.
11. ———, *Some Studies of the Post-World War II Residential Construction and Mortgage Markets*. Unpublished Ph.D. dissertation, Columbia University 1958.
12. A. H. HANSEN, *Business Cycles and National Income*. New York 1951.
13. C. D. LONG, *Building Cycles and the Theory of Investment*. Princeton 1940.
14. G. H. MOORE, *Statistical Indicators of Cyclical Revivals and Recessions*. Nat. Bur. Econ. Res., Occas. Paper 31, New York 1950.
15. W. H. NEWMAN, *The Building Industry and Building Cycles*. Chicago 1935.
16. J. J. O'LEARY, "The Effects of Monetary Policies on the Mortgage Market," *Jour. Finance*, May 1958, 13, 176-87.
17. M. REID, "Capital Formation in Residential Real Estate," *Jour. Pol. Econ.*, Apr. 1958, 46, 131-53.
18. J. R. RIGGLEMAN, "Building Cycles in the United States 1875-1932," *Jour. Am. Stat. Assoc.*, June 1933, 28, 174-83.

THE CYCLICAL SENSITIVITY OF THE LABOR SUPPLY

By W. LEE HANSEN*

Recent detailed investigations indicate that the percentage of persons in the civilian labor force remains relatively constant in the long run and is only slightly responsive, if at all, to changes in income and employment [5]. However, there is as yet considerably less agreement on the short-run, cyclical behavior of the aggregate labor supply, particularly as it affects the level of unemployment when aggregate demand declines [6, pp. 6-13] [8]. Much of the discussion centers on precisely how the labor force attachment of "fringe" workers—students, older workers, and especially housewives—varies with changes in the level of business activity.¹ Although a number of hypotheses have been advanced to suggest the kinds of changes that may occur and the reasons for such changes, the evidence offered in support of these hypotheses thus far has been inconclusive. Hence, in this paper an attempt is made to examine some rather neglected labor force data—the "gross change" data—in an effort to evaluate for the postwar period the validity of two of these hypotheses in particular.

I. *Two Hypotheses*

The disagreement as to how the supply of labor varies in the short run may be illustrated by citing two of the hypotheses offered to explain the higher than "normal" unemployment levels during recent recessions. Some commentators conjectured that as unemployment mounted, a large-scale and presumably temporary influx into the labor force of fringe workers who hoped to augment family incomes exaggerated the magnitude of unemployment. Others disagreed, maintaining that the unemployment totals were understated because of the rapid withdrawal from the labor force of "discouraged" work seekers, i.e., those who finally gave up their unsuccessful search for work. Two other hypotheses relate to periods of prosperity but they are not examined here.²

* The author is assistant professor of economics, University of California, Los Angeles. Robert B. Pearl, Bureau of the Census, and Harold Goldstein, Bureau of Labor Statistics, kindly made available unpublished data. Their comments as well as those of Clarence Long and Richard Wilcock, in particular, are acknowledged.

¹ As an example, Wool [10, p. 52] states that "... the systematic inclusion within the labor force of 'fringe' groups has resulted in a high degree of seasonality in the labor force totals ... and has tended to make the series relatively sensitive to cyclical changes in the level of labor demand." For a recent discussion of the role of fringe or secondary workers, see Wilcock [8].

² These hypotheses are: (1) fringe workers are attracted into the labor force and hence

That the level of unemployment in depressed periods may be greatly affected by entry into and exit from the labor force is by no means a recent notion. Its origins go back to the 1930's, when Woytinsky advanced his so-called "additional worker" theory, holding that in periods of depression the ranks of the unemployed are swelled by the entrance of family members seeking jobs because of the unemployment of the primary earner in the family [11, pp. 1-27]. But, later, Long suggested that even though additional work-seekers may appear in the market in periods of slack demand, their influence upon the unemployment totals will be offset, either completely, or in large part, by those who become too discouraged to continue looking for work [5, pp. 181-201]. Although these hypotheses were originally designed to throw light on the depression-unemployment experience of the 1930's, their plausibility has caused them to be extended to the recent recessions as well.

Which of these hypotheses is correct is of considerable importance in formulating antirecession policies. If fringe workers do enter the labor force but fail to find employment, thereby increasing the number of unemployed in depressed periods, it seems likely that the pressures for prompt and large-scale offsetting action by the government to alleviate these conditions will be accentuated. Yet, if this offsetting action should be designed to cope with total recorded unemployment, it may needlessly overshoot the mark. This would occur because as primary workers become re-employed the additional work-seekers are likely simply to withdraw from the labor force. If, however, the influx of additional workers counterbalances the outflow of discouraged workers, no such problem arises.

The kind of evidence required to test these two hypotheses cannot be found in the aggregate labor force statistics; for these statistics provide no indication of the size and pattern of the flows of individuals into and out of the labor force and into and out of employment and unemployment. They cannot tell, for example, how much of any increase in unemployment arises from the disemployment of workers and how much should be ascribed to the entry into the labor force of fringe workers. Nor do they indicate how many of the previously unemployed have been re-employed and how many others have dropped out of the labor market completely.

What is needed are data on gross changes in the labor supply which show the gross movements from month to month of individuals into and out of the labor force and into and out of the employed and unemployed categories. Through casual observation alone, one cannot

into employment because of the ease with which they can find jobs; and (2) rising incomes of primary wage-earners enable fringe workers to withdraw from the labor force and employment because it is no longer necessary for them to supplement the family income.

II. *The Impact of Gross Change Movements on Unemployment*

Before the gross change data are examined, the behavior of the civilian labor force and the level of unemployment from 1948 through 1959 should be briefly reviewed. From 1948 through 1959, the civilian labor force grew from 61 to 69 million persons, while unemployment ranged from yearly averages of 1.9 to 4.7 million persons, with wider variations observable in specific months.⁷ During this period, the civilian labor force as a percentage of the civilian noninstitutional population over age 14 remained relatively constant, ranging from 57.9 to 58.9 per cent, excepting 1956 when it reached 59.3 per cent. Unemployment, meanwhile, varied from 1.6 to 3.8 per cent of the civilian labor force. Examination of the annual data shows that changes in the percentage unemployed are not directly associated with changes in the percentage of people in the civilian labor force. This lack of association occurs despite the influence of three recessions, the Korean war, and alternating periods of "full" employment.⁸

What kind of impact do gross change movements exert on the level of unemployment and what is the significance of these movements for the hypotheses under consideration?

Table 1 presents some rough measures of the pattern of cyclical changes in unemployment and in the gross change rates. All rates were calculated from seasonally adjusted figures and then smoothed by a three-month moving average.⁹ The National Bureau dating of cyclical peaks and troughs is used, with two exceptions. Because of the unavailability of gross change data for July 1953, the most recent prior data, for October 1952, are substituted. As a concluding date for the analysis, data for the most recent month available, October 1959, are used.¹⁰

Line 1 shows the unemployment rate (unemployment as a percentage of the civilian labor force) in peak and trough months, while lines 2a, 3a, 4a, 2b, 3b, and 4b show gross additions to and reductions in unemployment (also as percentages of the civilian labor force) for various labor-force categories. A cursory examination of the rates in lines 2a, 3a, and 4a reveals that they fluctuate with changes in the level of unemployment. This is to be expected of gross additions to unemploy-

⁷ These figures and those given below are based upon the "new definitions" [13, p. 174].

⁸ For other comments on the stability of the labor force participation rate, see Long [4] and Rees [7].

⁹ The basic data were seasonally adjusted by the author. In computing the rates, gross changes from month 1 to month 2 were divided by the civilian labor force, or, where applicable, the civilian noninstitutional population over age 14 for month 1. The rates were subsequently smoothed because of the large standard error of estimates for month-to-month (net) changes, particularly when the size of the changes is so small (absolutely).

¹⁰ This is not to imply that October 1959 represented a cyclical peak but, rather, a reasonably high level of economic activity.

ment (2a) because with high or low unemployment a larger or smaller proportion of the work force is in the process of becoming unemployed. However, it is apparent that additions to unemployment from outside the labor force (3a) which average about 40 per cent of total additions to unemployment, also fluctuate with unemployment. This clearly indicates that such movements are sensitive to changes in the level of economic activity. (The differences between lines 2a and 3a indicate the rate of additions to unemployment from employment.) Of additions to unemployment from outside the labor force, roughly 50 per cent are housewives (4a); and here again, this rate fluctuates with the unemployment rate. However, the pattern is not quite as consistent as that displayed by the other series (2a and 3a). But when the additions in 3a and 4a are expressed as ratios of total additions to unemployment (2a), these additions constitute a fairly stable proportion of gross additions to unemployment, after due allowance for rounding (lines 5 and 7).

This portion of the evidence relating to gross additions supports the additional worker hypothesis inasmuch as a larger proportion of people flow into the labor force with a rise in unemployment. But, what about the evidence concerning gross reductions?

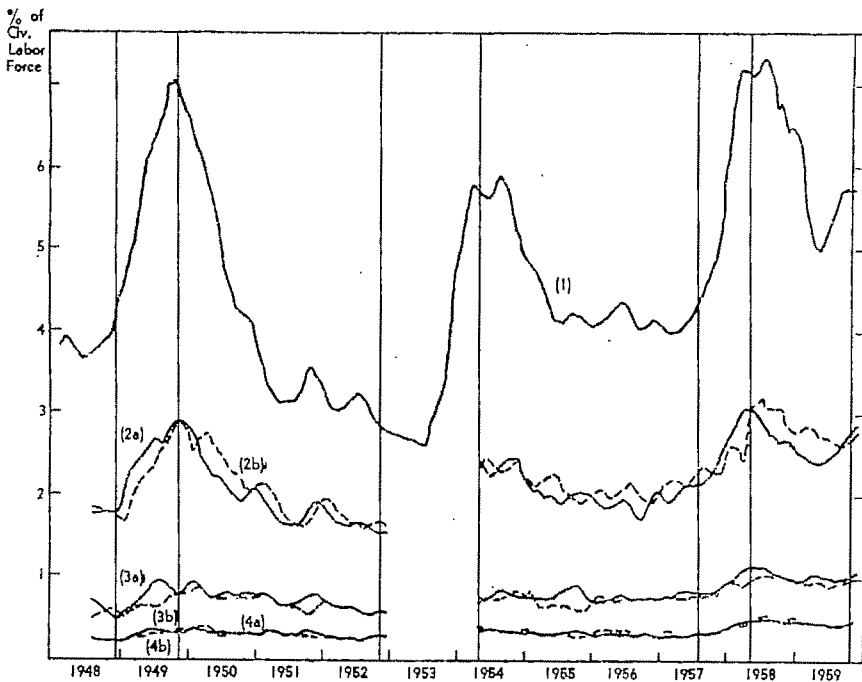
As can be seen by the rates in lines 2b, 3b, and 4b, reductions from each unemployment status almost completely offset the additions (lines 2a, 3a, and 4a, respectively), with the result that the ratios of withdrawals of unemployed from the labor force (3b) and of the unemployed who became housewives (4b) relative to reductions in total unemployment (2b) also show considerable stability (lines 6 and 8). Once again, the differences that do appear arise in large part from rounding.

The combined evidence on both additions to and reductions in unemployment where movement is to or from outside the labor force suggests that Woytinsky's hypothesis—that the influx of additional work-seekers raises the unemployment level in periods of high or rising unemployment—is not supported by the data for much of the postwar period. On the contrary, whatever increases in additions did occur were effectively canceled out by increases in reductions, in precisely the manner suggested by Long's hypothesis. Consequently, the Woytinsky hypothesis must be rejected while Long's is supported by the data.¹¹

It seems reasonable to believe, however, that the impact of net inflows of additional workers may not be fully apparent at cyclical troughs but rather will appear several months after the trough is reached because of lags in the adjustment of the labor supply. Because of this possibility, an examination of the data on a recession-by-recession basis seems to be in order. The data are plotted in Chart 1 and

¹¹ The data, however, provide no direct evidence on the motivations of the increased numbers of people seeking jobs or discontinuing seeking jobs.

CHART 1—RATES OF UNEMPLOYMENT AND OF GROSS CHANGES IN UNEMPLOYMENT, 1948-1959*



Identification Key:

- (1) Unemployment
- (2a) Gross additions to unemployment
- (2b) Gross reductions in unemployment
- (3a) Gross additions to unemployment from outside the labor force
- (3b) Gross reductions in unemployment owing to withdrawals from the labor force
- (4a) Gross additions to unemployment from keeping house
- (4b) Gross reductions in unemployment owing to withdrawals to keeping house

* Data were seasonally adjusted and then smoothed with a three-month moving average.
 Source: Same as Table 1.

are labeled as in Table 1. Caution must be exercised in interpreting the monthly data, however, given the possibilities of errors mentioned previously.

While unemployment was rising during most of 1949, gross additions to unemployment from outside the labor force almost consistently exceeded gross reductions. But only a small part of this excess was housewives; most were students. It can be argued that because of the recession students could not find jobs. Yet, this situation can be partly attributed to the exceptionally large college enrollments and large numbers of graduates that year, brought about by the GI Bill and the war-delayed college enrollments. Net inflows in the summer months of 1949 can probably be ascribed, therefore, to these special circumstances.

The slight excess of additions over reductions in the early months of 1950 is difficult to dismiss even though the size of the movement into the labor force proved to be small.¹² But, actually, movements from the status of unemployed to that of housewife were then exceeding the reverse movements. Thus, the inflow came from the "student" and "other" groups.

Lack of data for the final months of 1953 and the first two months of 1954 prevents an examination of the nature of the gross movements in this period of rapidly increasing unemployment and hence makes it difficult to interpret the small excess of additions to the unemployed from outside the labor force in early 1954.¹³ Some have theorized that the well-publicized discrepancy in the January 1954 unemployment totals between the old and new samples caused enumerators to be especially careful in their search for the unemployed in subsequent months [14]. If this were the case, then the higher levels in February-March 1954, of new entrants into the unemployed from outside the labor force and from housekeeping in particular may have reflected this situation. On the other hand, this evidence may provide some tentative support for the additional worker hypothesis. Still, the increases in the inflows were so small that one may easily question whether they are significant.

In the early part of 1958, additions from outside the labor force exceeded reductions but housewives did not make any substantial contributions to the flows. The increase that did occur can perhaps be attributed to the recession, but, oddly enough, here again students rather than housewives were the major contributors to the increase in unemployment. Yet, in this case the inflow of students took place in the middle of the school year!

It appears that in 1950, possibly in 1954, and again in 1958, some small net inflows of additional workers into the unemployed category did occur when unemployment was at recession-high levels. If so, how significant an impact did they exert on the level of unemployment? Because of the nature of the gross changes data, a precise quantitative assessment of this impact is difficult to make. However, if the differences between the lines indicating gross additions to and gross reductions in unemployment, representing persons moving into and out of the labor force, are summed and subtracted from the unemployment level, then a very rough estimate can be made. For example, had these flows not occurred, unemployment might have dropped off more rapidly

¹² Even though a net inflow from outside the labor force did occur, unemployment did not increase because the unemployed were being reemployed at a much faster rate.

¹³ The monthly data show a somewhat greater excess of additions over reductions in February-March 1954, an excess that quickly narrowed in the following months. From this one may infer that the excess was probably even greater in January-February 1954.

by, say, .2 per cent in January and by, say, .4 per cent in February 1950. Nonetheless, unemployment would still have remained at close to 6 per cent of the civilian labor force. In early 1954, the unemployment level might have risen somewhat more slowly if the apparent net inflow of additional workers had not taken place. Again, the magnitude of the effect would probably have been in the nature of .1 to .3 per cent at the very most. And in 1958, if a net flow of additional workers into the labor force had not occurred early in the year, unemployment would probably have risen less slowly to its August 1958 peak, thus reducing unemployment from April 1958 onward to about 7 per cent, roughly .2 per cent under the actual seasonally adjusted figures. All of these calculations rest on the assumption that no repeaters occur, i.e., that the same person does not show up as one of the gross additions in month 1 and then again in month 3 after being one of the gross reductions in month 2. Actually, given the probability that there are a fair number of repeaters, the possible effect of additional worker inflows is overstated, even if the data are taken at face value.

Any estimate of the impact of possible "additional workers" on unemployment levels should also take into account the full-time equivalents of the net additions. To the extent that two-thirds of new net additions are females, the likelihood is that the full-time equivalent increase in unemployment is substantially under one per additional person unemployed. Presumably a sizeable proportion of female entrants, whether housewives or "other," will be seeking part-time, rather than full-time, employment. Similarly, the group entering from schools will, except in the summer months, also be seeking part-time employment. Thus, although total unemployment figures are normally taken as an indicator of the severity of a downturn in economic activity, any possible inflows of "additional workers" will probably not appreciably accentuate the "real" level of unemployment.

III. *Possible Explanations*

What explains the failure of individuals to respond in substantial numbers to increases in the level of unemployment, either by entering the labor force to seek employment or by withdrawing because no jobs can be found? Three factors appear relevant: (1) the mildness of the postwar recessions, (2) the availability of unemployment compensation and of consumer-held cash assets, and (3) the relative unavailability of large supplies of "additional workers." Let us consider these points.

Because the postwar recessions have been relatively mild in their amplitude and of rather short duration, the average annual rate of unemployment has never exceeded 7 per cent. Furthermore, the unem-

ployment level usually dropped off by approximately two percentage points within a year following the upper turning-point. To the extent that the recessions were recognized as temporary, as was the general case, potential additional or fringe workers had less incentive to seek work. Of equal importance, the widespread availability of unemployment compensation undoubtedly permitted many families to partially maintain their levels of consumption until layoffs were terminated or other job opportunities presented themselves. In addition, the improved liquid-asset position of most families, as compared to conditions in the 1930's, plus the greater availability of consumer credit, may have helped to ease the financial distress which normally accompanies unemployment. Thus, wives and children were not forced to seek jobs in large numbers.

Finally, because most individuals not already in the labor force were fully occupied in other activities, i.e., attending school, keeping house while raising children, or physically unable to seek or undertake work, the supply of additional workers was probably rather limited. Certainly this was true of the housewife group; the younger ones were taking care of their families while a sizeable proportion of the older ones were already committed to the labor force on a regular basis. In a sense, one could argue that in the 1950's most of what would have been the additional worker group of the 1930's was already in the labor force. Thus, except for special circumstances such as during the second world war and the Korean war, when wives and girl friends sought employment while their husbands and boy friends were in military service, the elasticity of labor supply with respect to increases in the rate of unemployment would seem to have been close to zero over the relevant range.

How do the various hypotheses about short-run labor supply behavior stand up in view of this investigation? Obviously, the separate "additional worker" and "discouraged worker" flows do occur, as suggested by Woytinsky and Long respectively. However, Long's version, which includes both kinds of flows and assumes that they tend to be offsetting, is far more consistent with the experience of the last decade or so than the cruder version of Woytinsky. Still this is not to suggest that under conditions of severe recession or deep depression the inflows and outflows can be expected to balance out as they have in the past.

Some may still argue that the data are too rough to detect the type of movements suggested, especially in view of the mildness of recent recessions. Despite the many shortcomings of the data, seemingly regular and consistent patterns do occur, suggesting that they can be relied upon in an analysis of this kind. Accordingly, it is to be hoped that publication of these data will soon be resumed.

REFERENCES

1. G. BANCROFT, "Current Unemployment Statistics of the Census Bureau and Some Alternatives," *The Measurement and Behavior of Unemployment*, A Conference of the Universities-National Bureau Committee for Economic Research, Princeton 1955, pp. 63-119.
2. M. H. HANSEN, W. N. HURWITZ, H. NISSELSON, AND J. STERNBERG, "The Redesign of the Census Current Population Survey," *Jour. Am. Stat. Assoc.*, Sept. 1955, 50, 701-19.
3. M. H. HANSEN, "Comment," in *The Measurement and Behavior of Unemployment* [1, pp. 593-94].
4. C. D. LONG, "Impact of Effective Demand on the Labor Supply," *Am. Econ. Rev.*, Proc., May 1953, 43, 458-67.
5. ———, *The Labor Force Under Changing Income and Employment*, Nat. Bur. Econ. Research, Princeton 1958.
6. H. S. PARNES, "The Labor Force and Labor Markets," *Employment Relations Research*, Indus. Rel. Research Assoc. Ser., New York 1960, pp. 1-42.
7. A. REES, "The Meaning and Measurement of Full Employment," in *The Measurement and Behavior of Unemployment* [1, pp. 13-60].
8. R. C. WILCOCK, "The Secondary Labor Force and The Measurement of Unemployment," in *The Measurement and Behavior of Unemployment* [1, pp. 167-208].
9. S. L. WOLFBEIN, "Some Aspects of Unemployment Change," Proc., Soc. Stat. Sec., American Statistical Association, Dec. 1959.
10. H. WOOL, "Long Term Projections of the Labor Force," *Long Range Economic Projections*, Nat. Bur. Econ. Research, Studies in Income and Wealth, 16, Princeton 1954, pp. 43-66.
11. W. S. WOYTINSKY, *Additional Workers and the Volume of Unemployment*, Soc. Sci. Research Council, Pamph. Ser. 1. New York 1940.
12. BUREAU OF LABOR STATISTICS, U. S. DEPT. OF LABOR, "The Extent and Nature of Frictional Unemployment," *Employment, Growth, and Price Levels*, Study Paper No. 6 for Joint Economic Committee, Nov. 19, 1959. Washington 1959.
13. *Economic Report of the President, Transmitted to the Congress, January 1960*. Washington 1960.
14. U. S. BUREAU OF THE CENSUS, Report of Special Advisory Committee on Employment Statistics, "The Meaning of Employment and Unemployment by the Bureau of the Census in its Current Population Survey," mimeo., Aug. 1954.
15. U. S. BUREAU OF THE CENSUS, *Current Population Reports*, Series P-23, Nos. 2, 3, and 5.
16. U. S. BUREAU OF THE CENSUS, *Current Population Reports—Labor Force*, Series P-50, Nos. 16, 19, 31, 40, 45, and 59.

EFFECT OF TARIFF CHANGES ON THE PRICES AND VOLUME OF IMPORTS

By MORDECHAI E. KREININ*

For the past 25 years the United States has been granting tariff concessions to foreign nations under authority provided by the Reciprocal Trade Agreements Act of 1934. Negotiations leading to these concessions were conducted on a bilateral basis during the prewar years, and shifted to the multilateral framework of the General Agreement on Tariffs and Trade (GATT) in 1947. But throughout the entire period they were subject to the unconditional most favored nation principle under which a concession granted to any one country is immediately applicable to all other sources of supply. In total, these concessions had a sizeable effect on the United States tariff level, reducing the ratio¹ of duties collected to the value of dutiable imports by 50 per cent between 1933 and 1953:

Concessions made in all trade agreements apply to articles which accounted for 93.4 per cent of the total dutiable imports in 1952. . . . The average ad valorem equivalent of the duties on total dutiable imports (weighted by 1952 data) before any trade agreements were in effect was 24.4 per cent. The average at January 1, 1945, rates was 17.9 per cent; and as of January 1, 1953, it was 12.2 per cent [17, p. 3].

Although overshadowed by the substantial rise in income during the past generation, such a large decline in the level of protection could not fail to have some effect on the volume of U.S. imports.

This article utilizes data from the two most recent GATT negotiations, conducted in 1955 and 1956, to examine the effect of the United States tariff-reduction program on the prices and volume of imports subject to tariff concessions. After comparing the results to those obtained by other students of the subject, the data are used to draw policy conclusions and to measure roughly the gain in welfare and the loss of employment resulting from the tariff cuts.

I. Conceptual Framework

Schematically, the effect of our tariff-reduction program on the U.S. economy can be illustrated by the causal sequences set forth in Figure 1.

* The author is associate professor of economics at Michigan State University. He is grateful to the Ford Foundation for a faculty research fellowship in support of this project, and to Abba Lerner for helpful suggestions.

¹ The problems involved in interpreting average tariff rates need no elaboration here. For discussion, see U.S. Department of Commerce, "The Nature and Significance of International Comparisons of Tariff Levels" [3, pp. 225-29].

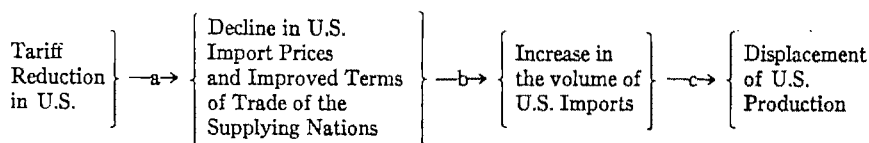


FIGURE 1. EFFECT OF U.S. TARIFF REDUCTION ON THE U.S. ECONOMY

A cut in our tariff rates may or may not result in an equivalent decline in import prices. In all probability only part of the reduction would be passed on to the U.S. consumer, the remainder being reaped by foreign suppliers in the form of higher export prices. The division of the total gain between the foreign producer and the domestic consumer would depend on the relative elasticities of import demand and export supply.

Considerations that have a bearing on the relevant elasticities include: the type of commodity involved; the share of imports in the total domestic consumption of the particular commodity;² existence or absence of "excess protection" in the importing country; the possibility of expanding production in the exporting country or of diverting output from domestic consumption and from third markets; availability of acceptable substitutes; the market structure (i.e., degree of monopoly) of production and trade in the two countries; profit margins; and the like. These complex factors³ are unlikely all to operate in one direction in any one case.

Despite the importance of the problem embodied in the first sequence of Figure 1, it is usually overlooked in studies concerning the impact of our Trade Agreements Program. Most students of the subject resort to a priori assumptions and proceed to examine the effect of tariff changes on the volume of imports. This approach is exemplified in a recent study by L. Krause [7] who:

... makes no effort to discover what price changes may have occurred in the two groups of goods, although price reductions are of substantial economic significance, quite apart from their influence on the quantities of goods imported. He simply assumes that import prices reflected fully the tariff changes in his reduced groups, and at one point refers to "the price changes negotiated at Torquay" [6, p. 555].

²Since the U.S. tariff is imposed primarily for purposes of protection, it can be safely assumed that competitive commodities are produced domestically.

³Even the relation between short- and long-run elasticities is difficult to determine in the case of export supply and import demand. In an internal market, the presumption is in favor of higher elasticities in the long run after more time is allowed for quantity adjustment. But the higher elasticity of domestic demand in the long run may be compensated for by an upward shift in the domestic supply curve leaving import demand unchanged. This could be the case in the United States, for example, when import-competing industries are induced (in the long run) to move to areas enjoying lower labor costs.

Such an a priori assumption is hardly warranted. In reasonably competitive markets in which imports represent only a small part of total consumption, a substantial increase in imports may occur with little decline in import prices. Instead, the rise in volume would be a result of higher prices obtained by foreign exporters who, having absorbed the tariff concessions, can afford to compete on the U.S. market. Indeed, Piquet makes the opposite (equally unwarranted) assumption of no decline in import prices [9, p. 18].

Sequence b of Figure 1 relates to the price elasticity of demand for imports. In the vast amount of empirical work⁴ done on the subject, very little use was made of tariff changes in computing price elasticities.⁵ Such an approach is indeed precluded by the prevailing tendency to overlook the price effects of tariff changes.

The final sequence of Figure 1 concerns the effect of a larger volume of imports on domestic production and employment. An attempt to measure the order of magnitude of employment displacement has recently been made by Walter Salant [11] [12] [13] and B. N. Vaccara [20]. After investigating the effect on domestic employment of a \$1 million increase in imports in each of 72 industries, Salant concludes that the largest net decrease in employment would be 175 employees, with a median of 86. Thus, a \$1 billion increase in imports could cause a maximum displacement of 175,000 workers—a small number compared to the employment effects of cyclical fluctuations or of the normal turnover in the labor force. He, however, does not assess the extent of the tariff reduction necessary to bring about such a displacement. The missing links will be supplied with the data developed below.

II. *Data and Procedure*

Of the five rounds of tariff negotiations which have taken place since the formation of GATT⁶—Geneva, 1947; Annecy, 1950; Torquay, 1951; the accession of Japan in 1955 and Geneva in 1956 [18]—the latest two were selected for use in the present investigation. The first three rounds occurred under post-world-war and Korean-war conditions. Prices of imported commodities, with which we are here concerned, experienced violent fluctuations during 1948-1952, but exhib-

⁴For a summary of the results of forty books and articles published on the subject between 1937 and 1956, see [1].

⁵An important exception is a study by B. A. de Vries [2], in which tariff changes are used to construct elasticity estimates. But the quantity and price figures employed in his study are not magnitudes of changes which have actually occurred. Instead they are based on the 1945 Tariff Commission estimates of the long-run effects of a 50 per cent reduction and a 50 per cent increase in the 1939 tariff rates on the volumes and values of imports of individual commodities.

⁶A sixth round of negotiations is taking place at Geneva in 1960-61.

ited a high measure of stability thereafter (Figure 2).⁷ The period since 1953 is therefore well suited for examination of the effect of tariff changes on import prices. Furthermore, the mid-1950's witnessed a re-



FIGURE 2. PRICE INDEXES OF IMPORTED COMMODITIES

Source: Figures derived from the "World Trade Review" series published in *Foreign Commerce Weekly*, and from *Total Export and Import of the United States*, both by the Department of Commerce.

turn of production conditions to normal in Western Europe and Japan. Consequently, price and quantity changes occurring during the second half of the decade would have a better predictive value than earlier changes. Finally, the Torquay negotiations of 1951 were already employed in a somewhat similar investigation by L. Krause [7] which will be discussed in Part IV.

Since the concessions granted in 1955⁸ became effective during that year, they will be studied by constructing and comparing price and quantity indexes for 1954 and 1956. The concessions granted in 1956 on the other hand became effective in three stages, on June 30 of 1956, 1957 and 1958, and will be studied by comparing the years 1955 and 1959. An elapsed period of four years has the added advantage of permitting a fuller adjustment to increased imports by U.S. import-competing industries. It should be noted that the 1955 concessions related only to the accession of Japan to the General Agreement and were therefore limited in scope. They were granted primarily on commodities for which Japan is the major supplier. The 1956 negotiations were clearly more significant, and will be relied upon more heavily.

The procedure followed involved a comparison of changes in the prices and the volume of imports between products on which tariff rates were reduced (reduced group), and immediate substitutes which were not subject to tariff reduction (nonreduced group). The two groups were made comparable by selecting the nonreduced group in such a way as to equate it to the reduced group with respect to commodity composition and the average value of imports in the two years under

⁷ Figure 2 shows annual data. But similar conclusions can be drawn from seasonally adjusted quarterly data.

⁸ For discussions of the concessions granted and received by the United States see [19].

comparison. A condensed version of the worksheet used in the computation is presented in the appendix to clarify the procedure. The worksheets used for analyzing the concessions were patterned after Part A and were subsequently aggregated in a manner indicated by Part B.

Adequate value and quantity figures⁹ were available for products accounting for 69 per cent of the reduced groups.¹⁰ The published net value figures are F.O.B. port of export, excluding transport and distribution costs¹¹ as well as the duty. The reduced and nonreduced groups would be expected, once aggregated, to show parallel price and quantity movements in the absence of the change in duty. A comparison between them will therefore reveal the effect of the tariff concessions.

An important shortcoming of this method (which is often overlooked in studies of this kind) lies in its implicit assumption that the prices and volume of the nonreduced group will not be affected by the tariff concessions. Since the two groups of commodities are competitive, the nonreduced category will move in a predictable direction depending on the cross-elasticity of demand. Following the presentation of the results in the next section, the implications of this qualification will be evaluated.

III. *Main Results*

A summary of the results pertaining to the 1955 negotiations is presented in Part A of Table 1. The concessions granted in that year amounted to 28 per cent of the 1954 tariff rates and to 8.7 per cent of the average foreign export price of the reduced group. Between 1954 and 1956, the average export price of the nonreduced group declined by 4.8 per cent, while that of its reduced counterpart rose by 1.2 per cent—a total discrepancy of six percentage points. The comparison suggests that less than a third (2.7/8.7) of the tariff concessions granted by the United States were passed on to the U.S. consumer in the form of reduced import prices, while more than two-thirds (6/8.7) accrued to the foreign suppliers and improved the terms of trade of the exporting nations. Alternatively, the figures can be explained as fol-

* Data were derived from the following sources: (a) Census reports [14], calendar years 1954 and 1956 for the 1955 negotiations; 1955 and 1959 for the 1956 negotiations. These reports contain tabulations of U.S. imports broken down to a seven-digit commodity classification. For each item they list net quantity and dollar value by country of origin; (b) Census schedule [15] which includes a conversion code to the five major economic classes; and (c) State Department reports [16] which contain the relevant information about the tariff concessions granted by the United States.

¹⁰ Total 1955 imports of products on which concessions were granted in 1956 were about \$875 million. Of this, commodities accounting for \$600 millions were used in the study, while the remaining \$275 millions had to be omitted for lack of quantity information or for other reasons.

¹¹ These are often assumed to be roughly equal to the foreign price [5, p. 388].

TABLE 1—PRICE AND QUANTITY CHANGES OF IMPORTED COMMODITIES

A Between 1954 and 1956					
	Change in Export Prices (per cent)	Quantity Change (per cent)	Tariff Reduction as Per Cent of		Average Value of Imports of the Re- duced Group for 1954 and 1956 (million dollars)
			Price (per cent)	Tariff (per cent)	
All Commodities					
Reduced Group	+1.2	+59	8.7	28	51
Nonreduced Group	-4.8	+17			
All Commodities—but Excluding Textiles					
Reduced Group	+1.6	+38	7.2	35	25
Nonreduced Group	-4.2	+28			
B Between 1955 and 1959					
					Average Value of Im- ports of the Reduced Group for 1955 and 1959
All Commodities					
Reduced Group	+3.9	+66	2.5	15	877
Nonreduced Group	+2.4	+54			
Finished Manufactures					
Reduced Group	+5.4	+80	2.8	13	392
Nonreduced Group	+3.9	+68			

lows: accounting for the tariff concessions, the reduced group experienced price reductions of $(1.2 - 8.7 =) 7.5$ per cent. Since the prices of the nonreduced group declined by 4.8 per cent, the benefit to the consumer from the tariff cut amounted to $(7.5 - 4.8 =) 2.7$ per cent, while the export prices rose by $(8.7 - 2.7 =) 6$ per cent. These price changes were accompanied by a 59 per cent increase in the import volume of the reduced group, compared to a 17 per cent rise in that of the nonreduced category—a differential of 42 percentage points.

A large part of the reduced group considered here consisted of textiles. But U.S. imports of textile products from Japan are not completely responsive to free market forces. Instead, they are subject to voluntary export quotas administered by the Japanese government. It is therefore desirable to center attention on nontextile imports. For this group, a tariff reduction amounting to 7.2 per cent of the 1954 prices, yielded a $(1.6 + 4.2 =) 5.8$ per cent increase in export prices and a $(7.2 - 5.8 =) 1.4$ per cent decline in import prices, and resulted in 10 percentage points differential in the change in volume of imports as compared with the nonreduced group.

Of far greater significance are the results presented in Part B of the table, based on data from the 1956 negotiations. The reduced group was 14 times larger than its counterpart in 1955, and covered a much wider range of products. Also the adjustment period allowed for was considerably longer. The reduced group experienced a 15 per cent reduction in tariff—approximately the amount authorized by the 1955 extension of the Reciprocal Trade Agreements Act.¹² This reduction constituted 2.5 per cent of 1955 prices. It follows that the average ad valorem rate for the reduced group declined from 17 to 14.5 per cent of 1955 prices.¹³

Allowing for the tariff concessions, the prices of the reduced group increased by $(3.9 - 2.5 =) 1.4$ per cent. Since the prices of the non-reduced group rose by 2.4 per cent, the reduced group experienced a 1 per cent decline in import prices and a $1\frac{1}{2}$ per cent increase in export prices.¹⁴ These price changes were accompanied by a 12 percentage point differential between the two groups in the change in volume of imports. The results seem fairly uniform among the two major commodity categories examined: finished manufactures and all other (consisting primarily of semimanufactures and manufactured food stuffs). They are also consistent with the results obtained for the tariff reductions of 1955.

It is improper, however, to assume that the nonreduced subgroup was unaffected by the tariff concessions. In our last example, the prices of the nonreduced group might have risen by more than 2.4 per cent were it not "held back" by the reduced prices of its close substitutes subject to tariff concessions. The one percentage point differential $(2.4 - 1.4)$ accruing to the U.S. consumer must therefore be regarded as a minimum. If, on the other hand, the two groups were perfect substitutes, the prices of the nonreduced group would have risen by almost 3.9 per cent in the absence of the tariff cuts. Since commodities in the nonreduced category are in turn substitutable in some degree for other imports which were not included in the computations, it is unlikely

¹² That extension authorized a 15 per cent reduction in duties, spread evenly over a three-year period. However, it also permitted a reduction to 50 per cent of all rates exceeding that level. That is, for products taxed at 60 per cent or over, the permissible cut was above 15 per cent.

¹³ Since the average rate on dutiable imports had been about 12 per cent in 1956, the reduced group had been subject to an above-average level of protection.

¹⁴ These figures implicitly assume that transport and distribution costs changed in the same proportion as foreign port export prices—an assumption reasonably consistent with available information. The increase in transport costs is known to have lagged behind the rise in prices, while foreign distribution costs in the United States probably rose more than export prices. If, however, marketing costs increased less than proportionately to export prices, the proportion of the tariff cut shifted to the consumer was subject to a downward bias.

that the maximum limit would have been reached. The gain¹⁵ to the consumer from the 1956 tariff concessions must therefore be between 1 and 2.5 per cent.¹⁶

It appears plausible that close to half of the benefit from tariff concessions granted by the United States accrued to foreign exporters in the form of increased export prices.¹⁷

The 12 percentage point differential in the volume of imports must also be treated with caution. Part of the differential represents growth of the reduced group at the expense of its nonreduced counterpart. The figure therefore tends to overstate the effect of tariff concessions on the volume of imports.

IV. *Comparison with Other Recent Studies*

Since recent investigations of the effects of tariff changes on U.S. imports have usually overlooked the price effect, only the changes in import volume can be compared to those found in other studies. One method frequently employed consists of a comparison between volume changes of dutiable and duty-free imports. Thus Piquet writes [3, p. 247]: "The fact that dutiable imports have been increasing more rapidly than free imports since the inauguration of the trade agreements program would seem to support the view that reductions of tariffs by trade agreements have been moderately effective." Such a conclusion is subject to the limitation that the distribution of imports between the free and dutiable lists is not random. The duty-free as well as low-duty items tend to be in the raw materials category while high duties are imposed primarily on finished manufactures.¹⁸ Because of these sys-

¹⁵ To this must be added a gain derived from lower prices of commodities which are close substitutes to the reduced group.

¹⁶ Where within this range is the actual figure likely to be? The \$877 million of tariff-reduced commodities consisted mainly of manufactured food stuffs, semimanufactures and finished manufactures, and amounted to some 10 per cent of the total imports of these categories. If the remaining 90 per cent were treated as the nonreduced group, the effect of the tariff reduction on their prices would be very small. Calculations based on the Department of Commerce aggregate statistics (see Figure 2 above) show that this group exhibited a 2.2 per cent increase in unit value, yielding a $[2.2 - (3.9 - 2.5)] = 1.8$ per cent benefit to the consumer. The high level of aggregation detracts from the value of this comparison. Yet, as indirect evidence it suggests that the actual gain to the consumer was closer to the lower limit of 1 per cent than to the upper limit. Similar supporting evidence can be applied to the case of finished manufactures. Here again, the gain to the consumer seems closer to the lower limit of 1.3 per cent.

¹⁷ One possible reason for this is the high level of economic activity in most industrial nations during the past decade. Inasmuch as European growth rates may decline in the 1960's, one can expect a larger share of future tariff reductions to accrue to the U. S. consumer. Another factor likely to bring about such a change is the curtailment of monopoly power in Europe which may accompany the implementation of the integration schemes.

¹⁸ U.S. tariff rates tend to vary more or less directly with the degree of processing or fabrication to which the merchandise has been subjected. Finished manufactures are thus

tematic differences in the typical economic characteristics and end uses of the goods on the two lists, there are no grounds for expecting the two groups of imports to show parallel growth rates in the absence of tariff cuts.

In order to overcome this difficulty the comparison between dutiable and nondutiable imports is made by Piquet for each of the 5 economic classes. The results, which are presented in Table 2, show larger percentage increases in 4 of the 5 major classes among the dutiable than among the free imports.

Another solution is provided by L. Krause [7]. Following a method similar to the one employed in this paper (and subject to the same limitations), Krause compares the growth of imports of manufactured commodities on which duties were reduced in 1951 (Torquay negotia-

TABLE 2—IMPORTS, DUTIABLE AND FREE, BY ECONOMIC CLASSES, 1947, 1953, 1956
(Imports in millions of dollars)

Economic Class	Dutiable Imports			Percentage Change 1947-56	Free Imports			Percentage Change 1947-56
	1947	1953	1956		1947	1953	1956	
Crude materials	585	1,117	1,321	+125.8	1,181	1,496	1,755	+ 48.6
Crude foodstuffs and animals	138	308	217	+ 57.2	879	1,877	1,818	+106.8
Manufactured foodstuffs	617	945	1,135	+ 84.0	39	163	32	- 17.9
Semimanufactures	420	1,272	1,564	+272.4	825	1,406	1,438	+ 74.3
Finished manufactures	452	1,217	2,034	+350.0	530	978	1,177	+122.1
Total	2,212	4,859	6,271	+183.5	3,454	5,920	6,220	+ 80.1

Source: H. Piquet, "Tariff Reductions and United States Imports" [3, p. 249].

tions) to competitive products which were not subject to tariff concessions. The years 1949-1951 were used as a base. His results show a 5 percentage point differential between the two groups 3 years after the concessions were made. He concludes that except for the few commodities subject to over 30 per cent tariff reduction, "no significant difference has been demonstrated between the behavior of the tariff-reduced group and the nonreduced group" [7, p. 544]. By contrast, in spite of

subject to higher rates than products in other economic classes. And among the finished manufactures, it is the goods produced by labor-intensive industries which are most heavily protected, while the protection accorded the mass-production industries is distinctly more moderate. For a discussion of the structure of the U.S. tariff, see U.S. Department of Commerce, "The Role of the United States Tariff and the Effects of Changes in Duty Rates," [3, pp. 211-23].

a smaller ratio of tariff reduction to import prices in 1956,¹⁹ our results show a 12 percentage point differential between the two groups in the finished manufactures category.

Three reasons may account for this difference. First, prices of imported commodities, and especially of finished manufactures, rose substantially during the period examined by Krause (see Figure 2). This implies a reduction in the effective tariff rate imposed on all commodities subject to specific duties. Since the nonreduced category is composed in part of such commodities, this factor would tend to dampen the differentiating effect of the negotiated tariff reduction. By contrast, the period used in the present investigation (1954-59) was characterized by relatively stable prices of imported commodities.

Second, prior to the mid-1950's many tariff rates were above the minimum prohibitive level. A significant portion of the concessions granted in 1951 were probably "dissipated" in the elimination of excess protection. It is plausible to assume that a smaller share of the 1956 concessions were so dissipated, making them more effective in increasing the volume of imports.

The final and perhaps most important factor was the substantial improvement in supply conditions in Western Europe and Japan between the first and second half of the past decade. For some 25 years, foreign producers:

... were effectively out of the American market—in the 1930's, because of the Hawley-Smoot tariff; in the 1940's because of the war, post-war shortages, and sometimes over-valued currencies until 1949; in the following five years because it takes time for export drives to bear fruit as a great deal of preparatory organisation is required . . . but in the following five years [since 1954] the harvest was reaped [8, p. 42].

Krause was dealing with a period in which foreign producers were laying the groundwork for increased exports to America. Their distribution and merchandising facilities in the United States were in a rudimentary stage, their home markets were ready to absorb all they could produce, and their general inducement to compete on the U.S. market was weak. Under such circumstances, it can hardly be expected that small changes in tariff rates would bring about prompt response. Entry into the U.S. market required high overhead cost; and only after the fixed investment in marketing and distribution facilities was undertaken could the volume of imports be expected to respond swiftly to

¹⁹ The ratio was smaller because: (a) the 1951 concessions were larger in magnitude than those granted in 1956; and (b) since tariff rates existing in 1956 were on the whole lower than the 1951 rates, a given percentage tariff reduction amounted to a larger proportion of price in 1951 than in 1956.

small changes in price. This had occurred by the period covered by the present study. The foundation for foreign penetration into the U.S. market was completed by the mid-1950's. And from then on, tariff changes could be expected to affect the volume of imports.

With only a few exceptions, the United States is the only country whose tariff concessions had meaningful economic effects during the 1950's. Western European nations, plagued by balance-of-payments difficulties, relied heavily on exchange controls and quantitative restrictions to regulate their trade, making tariff reduction almost totally ineffective. These conditions changed radically with the attainment of partial convertibility, and the 1960-61 round of GATT negotiations will yield, for the first time, usable data for Europe.

One possible exception is provided by Germany, where exchange restrictions were reduced to a minimum during the mid-'fifties. Furthermore, in 1956 and 1957 Germany embarked upon a unilateral tariff reduction program which practically halved its 1955 tariff rates. This reduction provided J. Wernelsfelder [21] with adequate data to study the German demand for imports. Using correlation analysis and assuming that the tariff changes were fully reflected in reduced import prices,²⁰ he finds that a 10-12 per cent price reduction brought about a 100 per cent rise in imports,²¹ yielding a price elasticity of import demand of 8-10. That elasticity would be considerably higher under an assumption of partial deterioration of the German terms of trade. But whatever the burden of evidence on this point, these results are fairly consistent with our findings for the United States.

V. Policy Implications

Certain tentative policy conclusions can be drawn from the preceding analysis. First, the data point to a limitation on our ability to combat inflation of the cost-push variety through tariff concessions of the general magnitude undertaken in the recent past.²² Not only are the concessions very small in relation to price, but part of them tends to be

²⁰ Wernelsfelder states in footnote 1, p. 98: "As far as can be ascertained, the tariff reduction has had no effect on the terms of trade. Indeed, this is hardly likely, seeing that the German market, as compared to the world market for finished industrial goods, is still of a modest size and monopolies that control the world market are scarce." Even if this assumption were warranted for Germany, it would not be justified for the United States, since the U.S. market is not modest compared to the world market.

²¹ The rise in imports was accompanied by an equivalent reduction in domestic production, and did not bring about any increase in consumption.

²² Cf. the following statement by A. Rees: "The contribution of tariff cuts to preventing inflation would be that they would increase the possibility of using imports to break bottlenecks in our economy and to check excessive price increases, so that prices of particular goods in short supply would be slower to rise when the economy as a whole was not operating at capacity" [10, p. 660].

absorbed by foreign producers rather than passed on to the U.S. consumer.

Second, our findings do not seem to confirm Krause's pessimism concerning the effectiveness of the trade agreements program in stimulating imports. With excess protection substantially eliminated and with large-scale foreign penetration into the U.S. market, the contrary views of Humphrey [5, pp. 150-51], Piquet, and Hinshaw [4, p. 279] appear to be supported by the data.

Third, given a few simplifying assumptions, we are in position to set an approximate upper limit on the gain in welfare²³ and loss of employment from the 1956 tariff concessions. Total imports subject to concessions amounted to \$1.7 billion domestic port value²⁴ in 1955. Thus the annual increase in imports caused by the tariff cuts was about $(1.7 \times 12\% =)$ \$200 million. The average rate of duty to which these imports were subject declined from 17 to 14.5 per cent. The duty represents the divergence between the value of the marginal unit traded to the producer and its value to the consumer. Increasing trade by one unit would raise welfare by the amount of the tariff since it would mean a transfer from the seller to whom it is worth the selling price to the buyer who values it at the selling price plus the tariff. The \$200 million increase in trade was subject to an average divergence of $[(17 + 14.5)/2 =] 15\frac{3}{4}$ per cent. Consequently the total annual gain in welfare is $(200 \times 15\frac{3}{4} =)$ \$31.5 million expressed in 1955 prices. This figure represents an *upper limit* since it should be adjusted downward (by an unknown amount) to account for the overstated increase in the volume of imports.²⁵

According to Salant [11] [12] [13] \$1 billion increase in imports (domestic port value) will have a maximum net employment effect of 175,000 workers (see also [20]). Such an impact would take place if the increased imports were concentrated in industries with the largest displacement effect and under the assumption of no expansion in domestic consumption.²⁶ Since the maximum displacement figure applies to only very few industries, and since United States tariff concessions encompass a wide range of products, it would be safe to select the

²³ The word welfare is used loosely here to denote economic efficiency. The discussion ignores the effects of the program on the distribution of income within and between nations.

²⁴ It is usually assumed that transport and distribution costs are roughly equal to the foreign price of imported commodities [5, p. 388].

²⁵ It should be noted that the tariff concessions resulted in a small decline in U. S. government customs revenue. The 15 per cent reduction in duty rates was associated with a 12 per cent increase in the volume of imports at only slightly higher prices.

²⁶ In other words, it is assumed that all of the increase in imports will occur at the expense of domestic production. The larger variety of products available on the market, or the minute increase in real income, are assumed to have no effect on consumption.

third quartile figure of 103,000 workers as the maximum displacement likely to occur per \$1 billion increase in imports. The 1956 concessions, which increased American imports by \$200 million displaced at the most 20,000 workers. Again the figure is an upper limit because of the overstated increase in the volume of imports.

Both the annual gain in welfare and the loss of employment caused by the tariff concessions are relatively inconsequential. It must be remembered, however, that these figures concern only the U.S. concessions. Once the reciprocal concessions obtained by the United States are taken into consideration, the welfare gain from GATT negotiations would be considerably higher and the employment loss considerably smaller. Furthermore, the gain from such concessions is much more important to foreign countries than it is to the United States. Once the concessions negotiated at Geneva in 1960-61 are implemented, it should be possible to conduct a more comprehensive survey of their effects both here and in Europe.

Appendix

WORKSHEET (sample)
(relating to the 1956 concessions)

A					
<i>Commodity Group: (Code number and description)</i>					
Commodity (code)	Average \$ Value $V_{55} + V_{56}$	Tariff Change as Per Cent of 1955 Price	Tariff Change as Per Cent of 1955 Tariff	Percentage Price Change $(P_{56} - P_{55}) \times 2 \times 100$	Percentage Quantity Change $(Q_{56} - Q_{55}) \times 2 \times 100$
	2			$P_{55} + P_{56}$	$Q_{55} + Q_{56}$
(a)	(b)	(c)	(d)	(e)	(f)
I Commodities With No Tariff Cut					
II Comparable Commodities Subject to Tariff Cut					

B

Weighted Percentage Tariff Change $\frac{\Sigma c \times b}{\Sigma b}$ (g)	Weighted Percentage Tariff Change $\frac{\Sigma d \times b}{\Sigma b}$ (h)	Weighted Percentage Price Change $\frac{\Sigma e \times b}{\Sigma b}$ (i)	Weighted Percentage Quantity Change $\frac{\Sigma f \times b}{\Sigma b}$ (j)

REFERENCES

1. H. S. CHENG, "A Collection of Elasticities and Propensities in International Trade," *IMF Staff Papers*, Apr. 1959, 7, 107-58.
2. B. A. DE VRIES, "Price Elasticities of Demand for Individual Commodities Imported into the United States," *IMF Staff Papers*, Apr. 1951, 1, 397-419.
3. *Foreign Trade Policy*, Compendium of papers, Subcommittee on Foreign Trade Policy of the House Committee on Ways and Means, 85th Cong., 2nd Sess., Washington 1958.
4. R. HINSHAW, "Implications of the Shift in the U.S. Balance of Payments," *Am. Econ. Rev.*, Proc., May 1959, 49, 274-83.
5. D. HUMPHREY, *American Imports*, New York 1955.
6. W. S. HUNSBERGER, "Comments on Krause's Paper," *Am. Econ. Rev.*, Proc., May 1959, 49, 555-58.
7. L. B. KRAUSE, "United States Imports and Tariff," *Am. Econ. Rev.*, Proc., May 1959, 49, 542-51.
8. D. MACDOUGAL, *The Dollar Problem: A Reappraisal*, Princeton Essays in International Finance No. 34, Princeton, 1960.
9. H. S. PIQUET, *Aid, Trade, and the Tariff*. New York 1953.
10. A. REES, "Price Level Stability and Economic Policy," *The Relationship of Prices to Economic Stability and Growth*, Compendium prepared for the Joint Economic Committee, Washington 1958, pp. 651-69.
11. W. S. SALANT, "Primary Effects on Employment of Shifts in Demand from Domestic to Foreign Products," *Rev. Econ. Stat.*, Suppl., Feb. 1958, 60, 91-102.
12. ———, "The Short-Run Domestic Economic Effects of Reducing Import Barriers," *Foreign Trade Policy* [3, pp. 267-301].
13. ———, "Employment Effects of United States Import Liberalization," *Am. Econ. Rev.*, Proc., May 1960, 50, 419-32.
14. U. S. BUREAU OF THE CENSUS, *United States Import of Merchandise for Consumption*, Report No. FT 110.
15. ———, *Schedule A: Statistical Classification of Commodities Imported into the United States*, 1954 and 1957 editions.

16. U. S. DEPARTMENT OF STATE, *Analysis of Protocol for Accession of Japan* (1955), and *Analysis of the Sixth Protocol* at Geneva, 1956.
17. U. S. TARIFF COMMISSION, *Effect of Trade Agreement Concessions on United States Tariff Levels Based on Imports in 1952*, Washington, Sept. 1953.
18. ———, *Trade Agreements Manual*, a summary of selected data relating to trade agreements that the United States has negotiated since 1934, Washington, March 1957.
19. ———, *Operation of the Trade Agreements Program* (annual reports).
20. B. N. VACCARA, *Employment and Output in Protected Manufacturing Industries*. Washington 1960.
21. J. WERNELSFELDER, "The Short-Run Effect of the Lowering of Import Duties in Germany," *Econ. Jour.*, March 1960, 70, 94-105.

KARL MARX AND SOVIET NATIONAL INCOME THEORY

By VACLAV HOLESOVSKY*

The Soviet concept of national income as an aggregate of net material output excluding most services has been adopted, with minor modifications, by all countries of the Soviet bloc and by Yugoslavia [40]. In the West it has been examined by a number of economists and found inadequate on several counts: it is a poor measure of a country's productive activity and an even poorer indicator of its economic well-being; it is insufficient even as a tool for economic planning; and, for the purpose of international comparisons, it is a nuisance. Further, it fails to give a complete account of a country's economic structure, and it is not a reliable index of its economic development in time [9] [25] [33] [37] [39].

In discussions of the Soviet concept it has become customary to refer to it as Marxist. Under prevailing circumstances, this is more than just a convenient label; it expresses a tacit acceptance of Soviet claims concerning the origin of the concept. On occasion, this acceptance becomes explicit. Paul Studenski, for example, who took the trouble to collate Soviet ideas with some of the relevant pages in Marx's writings, and who noted certain discrepancies, concluded that the theory evolved by Soviet economists could, after all, be traced to Marx [37, pp. 199-201] [38, pp. 22-23]. It is the purpose of this paper to show that this presumed doctrinal lineage is not clear and that, on the contrary, those Soviet economists who in the past advocated broader national income concepts could with some justification point to antecedents in Marx. There is a good deal less conflict between Marx's writings and the Western concept of national income than there is between Marx and the Soviet theories on the subject.

Of all the controversial aspects of Soviet national income accounting we shall be concerned with only the extent of the area of economic activity to be covered by the national income and product aggregates. In this respect, the Soviet theoretical framework can be reduced to the following set of propositions:

*The author is research associate at Columbia University. Since 1959, a Group of Rap-porteurs on Comparison of Systems of National Accounts in Use in Europe, organized by the Conference of European Statisticians in cooperation with the United Nations Statistical Commission, has been meeting annually in Geneva, bringing together Western and East European specialists in national income accounting. (The United States has been represented by an observer in the person of Dr. T. P. Alton.) It is hoped that the present paper may prove helpful by providing some ideological and historical background to the East European views encountered at these conferences. The author is indebted to Alexander Erlich, Harold Barger and Andrzej Korboński for helpful criticism and comment.

1. The only scientifically correct delimitation of national income is given by material output.

2. Material output, as well as the income originating in its production, is the result of productive labor; it is "primary" in the sense of providing the basic prerequisite for the supply of services which represent the nonmaterial result of unproductive labor.

3. Including services and the corresponding "derived" income in the national income aggregate would constitute double counting. The exclusion of services, however, does not necessarily imply a denial of their social usefulness or necessity [3] [5] [8, pp. 240-43, 686-87] [10] [11, pp. 263-64] [12, pp. 134-51, 253-91] [22] [27] [28].

In the following discussion, we shall be concerned with the doctrinal consistency between Marx's writings and this set of propositions, rather than with the substance of the arguments themselves.

I. *Confrontation of the Soviet Theory with Marx*

In order to answer the question of doctrinal consistency a confrontation limited to one or two decisive points would probably be sufficient. However, since there is some interest in the general aspect of the matter—i.e., the treatment of Marxian thought in the USSR—we have preferred an exhaustive point-by-point confrontation (Section A). After this we shall take up several subsidiary topics in Marx, also relevant to the problem of national income and product coverage, whose fate in Soviet economic literature deserves a separate note (Section B).

A. *Point-by-Point Confrontation*

1. "*National income originates in material output only.*" Possibly the only place where Marx used the expression "national income" reads: "Viewing the income of the whole society, the national income consists of wages plus profit plus rent . . ." [17, Vol. III, p. 979]. It can be readily shown that the "national income" in this passage is much broader in scope than the Soviet concept.

The passage refers to aggregate social income on the assumption that capitalist production is coextensive with the whole of society's production. The entire discussion of the theory of capitalist reproduction is in terms of a model of pure capitalism, with noncapitalist production excluded. This assumption, which was maintained by Marx throughout his exposition, is stated explicitly in a footnote at the start of the first round of his analysis of capitalist reproduction, as follows:

In order to examine the object of our investigation in its integrity, free from all disturbing subsidiary circumstances, we must treat the whole world as one nation, and assume that capitalist production is everywhere

established and has possessed itself of every branch of industry [17, Vol. I, p. 636].

Now, in contrast to our modern usage, Marx often used the term "industry" in a comprehensive sense, so that it covered agriculture, and also services; elsewhere in *Capital* the question of the inclusion of services is settled without possible doubt. Analyzing the production of value and surplus value in what amounts to the sector of capitalist services Marx writes:

. . . There are certain independent branches of industry, in which the result of the productive process is not a new material product, not a commodity. Among these, only the industries representing communication, such as transportation proper for commodities and human beings, and the transmission of communications, letters, telegrams, etc., are economically important [17, Vol. II, p. 61].

It is obvious that communications, including transportation, were singled out from among the services only because of their volume, while other, smaller branches of services, e.g., entertainment or instruction, are subsumed under the general category.

As for output which lies outside the capitalist mode of production, it was excluded from Marx's abstract model by definition. The further question therefore is: Had Marx treated the concrete, statistical problem of total national income, would he have counted noncapitalist production of services? There is no reason to believe that he would have left those out as a category, since in his all-capitalist model he included services as a matter of course.

2. "*Material output is output of productive labor.*" Can it be demonstrated that Marx thought of productive labor as producing only material objects, unproductive labor only services? In Marx's principal writings there are only a few incidental references to what is known as his productive-labor theory, and nowhere else did he give a finished exposition of it. What exists is only some raw material for such a theory, to a large extent in the shape of reading notes, not intended for publication by Marx, but edited and published posthumously by Karl Kautsky in a volume entitled *Theories of Surplus Value* (Title of the American edition: *A History of Economic Theories*) [16]. Given the sketchy and casual character of Marx's manuscript, the core of his notes on the productive-labor theory is remarkably unequivocal. In short, according to Marx's critical analysis of Adam Smith's theory, which serves him as a springboard for his discussion, the difference between productive and unproductive labor has nothing to do with the difference between material and nonmaterial output of labor: "The

concrete character of the labor, and therefore of its product, do not, as such, play any part in this division of labor into productive and unproductive" [16, p. 200].

Unfortunately, Marx used the expressions "productive" and "unproductive" in a number of senses among which he did not always differentiate with sufficient clarity. In this section, we shall be concerned with the more explicit definitions which lead to the formulation of what can be considered Marx's specific theory of productive labor. Those meanings which must be isolated by means of a certain amount of exegesis will be discussed in Section B.

(a) Marx speaks of productive labor in the simple sense of labor producing use values; he does so in his analysis of the "simple work process" in which abstraction is made of the social mode of production [17, Vol. I, p. 201 n.]. (b) Further, labor may be considered as productive from the point of view of the man for whom it is a source of his means of existence; or from the point of view of a particular capitalist for whom it is a source of profit; at the same time the activity in question may be unproductive on another level of the word's meaning, as for instance in the case of a professional criminal, or in trade¹ [16, pp. 302-3] [17, Vol. III, p. 356]. (c) From another point of view, labor is "*absolutely*" *productive* in so far as it provides the laborer with sufficient means of subsistence, not more, not less [16, pp. 194-95]. (d) Under certain conditions labor becomes "*relatively*" *productive*; in this definition the quantitative relations come to the fore: "... In addition to the old value which he replaces, the laborer creates a new value; more labor time is realized in his product than in the products which keep him alive and fit to work" [16, p. 195]. (e) Finally, "productive labor in the capitalist sense of the term," resting upon the "relative" productivity of labor, adds to its purely quantitative determination the further characteristic of the social mode of production: the excess above the means of subsistence of the laborer is produced in the form of surplus value. It is this last meaning of the word which is further elaborated in what is usually termed *the* productive-labor theory of Marx.

For classical and preclassical economists this problem of productiveness—which lost its meaning for economic theories prevailing today—was tied to the development of the labor theory of value. While Mercantilists recognized productiveness in foreign trade as bringing in gold through a positive balance of trade, and Physiocrats found it in agriculture, Adam Smith recognized productiveness in the production of material commodities in general. So far the criteria of productive-

¹ For the discussion of trade viewed as unproductive activity see below in Section B.

ness were in terms of some concrete class of output. But behind Smith's definition of productive labor Marx perceived the existence of a purely formal definition in terms of economic value and surplus value; according to it Adam Smith "should have regarded as alone productive that labor which exchanges with capital" [16, p. 215]. Marx undertook to separate the two Smithian definitions and made the formal one his own.

Marx gave several variants of this definition. One variant turns on the nature of the source from which the wages of the two sorts of labor are paid. Wages of productive labor are paid from capital, i.e., working capital; wages of unproductive labor are paid from revenues, i.e., from disposable personal income and taxes. Another variant rests on the immediate destination of the results of the hired labor's work. Productive labor produces an exchange value for the capitalist—be it a material object or a service—and the capitalist sells it further at a profit; it becomes use value only when consumed by the final user. Unproductive labor furnishes the use value immediately to the final user. Whatever the variant, Marx repeatedly insists that the categories productive-unproductive are "unrelated to the particular specialization of the labor or to the use value in which this specialization is realized" [16, p. 201]. Marx adduces a great many picturesque and even grotesque examples, in order to emphasize the point that productive labor may be supplying services as well as commodities, while unproductive labor may be objectivized in commodities as well as be confined to activity only. For example, a tailor in the garment industry and a clown working for a capitalist circus firm are both productive, i.e., productive of value and surplus value. A tailor making a suit for a private individual, and an itinerant streetsinger are both unproductive, i.e., supplying only use values for immediate consumption [16, pp. 199, 200, 319-20].

Marx's productive-labor theory is merely an elaboration of one facet of his general theory of value in the capitalist system; it does not add anything essential to it. Marx develops the basic dualism between production-for-the-sake-of-surplus-value and production-for-the-sake-of-consumption by pointing up the dualism between productive and unproductive labor—a dualism dissimulated by the formally undistinguishable acts of hiring labor. The productive-labor theory was never meant to be the basis of a national income definition.

Now, since Marx makes a point of rejecting materiality as the criterion of productiveness, the question that naturally comes to mind is this: How can his theory possibly be used in support of the Soviet theory for which materiality becomes the only criterion of productiveness? Further: What was the use of a theory of capitalist relations to a system that all economists concerned regarded as noncapitalist, or

at least transitional? The answer is that Marx's theory could not be used as it stood. The needed support for Soviet national income theory had to be read into it first.

When the Soviet theory started to evolve, in the late 1920's, A. I. Petrov and R. E. Vaisberg, two proponents of the material-output concept, developed each his own approach. Petrov [29] argued that Marx's productive-labor theory, correct with respect to capitalist profit-making, was indeed inapplicable to the Soviet system—except for the idea, in Petrov's view commonly shared by Marx and Smith, that only labor producing material things produces "value," while labor in the form of services produces only use value [29, pp. 115-16]. And since, according to Petrov, social production is to be defined as production of value, it follows for him that only material output should constitute its content.

Petrov was of course aware that, in Marxist theory, the production of value could refer only to the production of exchange values. What, then, would be his treatment of material output which does not take the form of marketed exchange values, but exists as immediate use value outside the market, as in the case of farmers' consumption in kind, or—at least in theory—in the case of the output of socialized enterprises?² In such instances Petrov simply applied ordinary valuation in money terms, by analogy with the output of commodities.

The flaw in Petrov's attribution of the material-output concept to Marx lies in his imputing to Marx the idea that value can be embodied only in material objects. The conclusion to be drawn from Marx's theory of productive labor was, as we have seen, the exact opposite. Petrov was on equally shaky ground when he took for granted, as axiomatic, that the content of the social product should be the output of value (in the Marxian sense)—a thesis which he himself discarded as he took account of material output produced outside the sphere of marketed commodities.

As for R. E. Vaisberg, his approach was much less pedestrian [41]. He tied his material-output concept to the first principles of Marx's *Geschichtsphilosophie* exemplified in the sentence: "The mode of production of material life determines the process of social, political, and intellectual life in general" [18, p. 5]. This approach saved Vaisberg much struggling with Marx's economic writings but it made him treat "production of material life" as synonymous with "material output."

In the one place where Vaisberg did turn to Marx's economics for support he resorted to a misrepresentation. The quotation, if taken

² At the time of these writings Petrov was still more than two decades away from Stalin's edict on the "production of commodities under socialism."

out of Marx's context, actually seems to support Soviet productive labor theorists:

... It can be said, the characteristic of productive laborers, of laborers producing capital, is that their labor realizes itself in commodities, in material wealth. We have thus found a second [,] subsidiary characteristic of productive labor distinct from its determining characteristic [which is] absolutely independent of the content of labor [16, p. 326].

The misrepresentation consists in Vaisberg's failure to mention the hypotheses which introduce the statement quoted, and which limit its practical validity. The stated assumption is that the capitalist mode of production embraces all material output. The unstated complementary assumption is that all services are supplied on a noncapitalist basis, i.e., by the self-employed [cf. also 16, p. 202]. Without this double assumption the "subsidiary characteristic" is deprived of its basis.

It would seem that Marx played here with the possibility of saving Smith's concrete definition of productive labor, as that which produces material commodities, by subordinating it to the principal, formal definition. In the immediately following text [16, pp. 327-28] Marx tested the realism of this theoretical construction; to make it applicable, he suggested that capitalist production of services (private schools, entertainment business, etc.) be disregarded as quantitatively insignificant, and that services of the transportation industry be considered as "material production." At any rate, in his principal work Marx found no use for this subsidiary characteristic and its corollary assumptions; as we have seen, in principle, he did not disregard capitalist services even though he considered them too minute to warrant extensive treatment in his model, which was perhaps understandable at the time of his writing; finally, he did not oppose transportation, as belonging to material production, to other services [17, Vol. II, p. 61ff.]. (See also subsection 1 of this section, above.)

Neither Vaisberg's nor Petrov's original approach was incorporated in the final version of the Soviet theory. It is not clear why they were abandoned. If it was because of their awkwardness, the accepted solution seems hardly to constitute an improvement.

In its final version, the Soviet theory asserts that productive labor is that which produces the material basis indispensable to the existence of mankind and therefore also to the existence of services. Underneath Marx's concept of productive labor "in the capitalist sense," and independent of it—so goes the argument—there is a more general theory of productive labor, common to all past and future economic systems. Productive labor in this general sense is labor transforming and adapting nature to suit human needs, and resulting in material

products. The question is whether Marx ever bothered to build an entire theory of productiveness on a platitude such as *primum vivere*. Or whether he would have subscribed to an absurdity such as equating the bulk of material products with necessities, and the bulk of services with expendable luxuries.

Soviet economists have been assigning great importance to two passages which apparently lend credence to their contention. One of these states: ". . . Productive laborers create the material base for the maintenance, and therefore the existence, of the unproductive laborers" [16, p. 228]. But in the passage in which this sentence occurs the criterion of productiveness still remains the hiring of labor by capital, not the production of material means of existence. The overwhelming concentration of material output in the capitalist sector, and the small proportion of services in it, were, for Marx, only an incidental matter, a tendency, entirely due to technical causes [16, pp. 228, 326]. The other quote deals with the relationship between changes in output per worker and the amount of time available for activities other than the production of means of subsistence, to wit:

Suppose, that as a result of the productivity of industry, one third of the population, instead of two thirds, participates directly in material production. Instead of two thirds, it is now one third which furnishes means of subsistence for the whole population. The net revenue, as distinct from the revenue of the laborers, is no longer one third but two thirds. Without going into the question of the opposition of classes, the nation would now dispose not of one third but of two thirds of its time for immaterial productions. Equally divided, the three thirds would have more time for unproductive labor and for pleasure" [16, p. 247].

In this statement, there is an indubitable assimilation of "means of subsistence" to "material production," and of "unproductive labor" to "immaterial production." How significant is this obvious oversimplification? In the form given here, it certainly contradicts those sections of Marx's theory which deal with the matter in greater detail. In *Capital* Marx discusses at length the subdivision of consumer goods into necessities and luxuries [17, Vol. II, p. 466ff.]; elsewhere in the *Theories* Marx shows that he is well aware that necessities and luxuries are to be found among material commodities as well as among services [16, pp. 322-23]. It would therefore seem appropriate to dismiss the passage as a lapse or as a rough outline of an idea.⁸

⁸ Let us once more recall at this point the character of the text from which the last quotation is taken. Unlike most parts of *Capital*, the *Theories*, and especially the various notes on productive and unproductive labor, represent less than a first draft; they are mere sketches and observations, prompted by Marx's reading of various economic works, and put down as they occurred to him. Often a paraphrase of an author merges into Marx's own comment or the focus of comments shifts from one reading session to the next. To use such

Another group of references to Marx that one encounters in Soviet writings seem equally inconsequential. They concern Marx's definition of production as "appropriation of nature by man within and through a certain determined social form" [18, p. 312] or his description of the work process in terms of action exercised with the help of tools upon a work object [17, Vol. I, pp. 197-204]. None of these references prove what they are supposed to. The manuscript from which the first of the two quotes is taken limits its subject in the introductory sentence to "first of all material production," allowing for the existence of non-material production, and therefore productiveness, besides [18, p. 305]. It is true that Marx often wrote of work as action of man upon nature but he did not oppose this work to services rendered by man to other people, or make this aspect into a distinguishing feature of productiveness.

As for the description of the work process in terms of activity—instrument—object Marx's purpose was not to establish a criterion of productive work as compared to nonproductive but merely to analyze the labor process into its "simple elementary factors" [17, Vol. I, p. 204]. Also, when it comes to concrete types of work the results of which do not manifest some of the simple elementary factors, e.g., a separate work object, as in the case of transportation and other services, Marx simply notes the fact without therefore banning them from the sphere of production.

However, no type of theory of productive labor would matter for the definition of national income if it were not for the implication that incomes of unproductive laborers are "derived" incomes in the sense of redistributed incomes, i.e., transfers.

3. "*Incomes of services amount to transfers.*" To say that "primary" incomes originating in material production are redistributed, therefore duplicated, in the form of incomes of persons active in services seems to imply that services give nothing in exchange to those who buy them or provide for them through taxes. This extreme interpretation was literally made by the pro-Soviet French economist Jean Bénard [4]. Since Soviet economists admit the usefulness and even the necessity of services, it is more appropriate to say that for them services do not seem accessible to economic measurement in value terms. In a strictly economic valuation they do not count. In an analogous way an act of courage or winning in a lottery, or any other "merit" for which a

a text fruitfully it is imperative first to distill from it a coherent theoretical structure and to bracket out inconsistencies. The scholastic approach, practiced as a rule by Soviet economists, is to attach equal weight to each single word and phrase and to let inconsistencies coexist unadmitted and unresolved. It is our view that, in the instance quoted above, Soviet theory naively invokes a passage which, in its given wording, would have to be eliminated from any critical reconstruction of Marx's theory.

person receives a pecuniary reward, does not come under the category of economic value, which is exactly what makes the income received on such a basis a transfer. Does this correspond to Marx's view of the matter?

The relation between incomes originating in capitalist production and those originating outside of it is touched upon in *Capital* where Marx happened to characterize the latter incomes literally as "derived" (*abgeleitet*):

All members of society not directly engaged in reproduction, with or without labor, can obtain their share of the annual product of commodities—in other words, their articles of consumption—primarily only out of the hands of those classes who are the first to handle the product, that is to say, productive laborers, industrial capitalists, and real estate owners. To that extent their revenues are substantially derived from wages (of the productive laborers), profit, and ground rent, and appear as indirect derivations when compared to these primary sources of revenue. But, on the other hand, the recipients of these revenues, thus indirectly derived, draw them by grace of their social function, for instance, that of a king, priest, professor, prostitute, soldier, etc., and they may regard these functions as the primary sources of their revenue [17, Vol. II, p. 429].

The purpose of this passage is to trace the flow of personal incomes originating in the capitalist sector, and the corresponding process through which the consumable part of capitalist output partly returns to those who participated in its production within the sector, partly finds its way into the noncapitalist sphere. In a somewhat similar passage in the *Theories* Marx develops the idea that the market for noncapitalist services is limited by that part of personal incomes originating in the capitalist sector which their recipients decide to spend on those services. From this it follows that "the labors performed by professors and doctors do not directly create the funds out of which they are paid" [16, p. 208].

To rephrase this train of thought, spending of revenues earned in the capitalist sphere for capitalist output forms part of the circular movement of capital (money capital—purchases of inputs—production process—sales of output to the original sellers of inputs—money capital); spending of these revenues for noncapitalist output represents a momentary leakage from this circular movement which is restored again when the noncapitalist income recipients spend their revenue on capitalist output. These "detour transactions" between the noncapitalist and the capitalist sectors are purely bilateral exchanges and do not generate any circular movement of their own that would be analogous to the circulation of capital; if we disregard transactions

within the sector of non-capitalist services, their suppliers cannot be customers buying their own product.

Now, in order to be justified in interpreting these passages, and specifically the word "derived," to mean that there is double counting, one would have to show that Marx had denied any exchange value to the labor force offering the various "social functions." But the passages quoted are not conclusive to this end because in these passages the economic aspects of these functions are not under consideration.

Wherever Marx did analyze the economic aspects of noncapitalist services he left little doubt that he understood the purchase of services as an exchange, economic in nature, which in the pure case was always an exchange of value equivalents, in other words the very opposite of transfers. He writes: "The laborer himself can purchase labor, that is to say he can buy commodities in the form of services. If he thus spends his wages for their equivalent in services, it is as though he had spent it on commodities of any description" [16, p. 322]. And several sentences later:

These services, like the commodities I buy, can be necessary, or at least can seem so, like those of a soldier, a doctor, a lawyer, or may simply give me pleasure; *this in no way changes their economic character. . . .* The services might even be imposed services, like those of functionaries and the like [16, p. 323; my italics].

What is true for an individual act of exchange is also true in the aggregate:

Alongside consumption goods existing in the form of commodities, there is always a quantity of consumable items in the shape of consumable services. The total value of the consumption items is, at all times, greater than would be the case if these consumable services did not exist. It is equal, in fact, to the value of the commodities paid for these services themselves. As in all exchanges between commodity and commodity, value is given for value received [16, p. 209].

Although Marx may at times have tended to reserve the term commodities for material output [16, p. 210], the preceding quotes show convincingly that he viewed the output of services—commodities which "consist of labor power alone" [16, p. 202]—as an economic good in its own right. The interpretation of his "derived" incomes as transfers is thereby positively refuted.

If one examines closely all of Marx's statements concerning services, one notes a certain wavering between two kinds of formulations. Most often, the argument is conducted in terms of the conventional antinomy, "commodities" versus "services." At other times, however, Marx

returns to his own conceptual system and terminology. According to the latter, service in the broad sense is nothing but the use value of a commodity, and "service" in the specific sense is the use value of one particular commodity, i.e., of labor power [16, pp. 321-22]. Use values, being purely qualitative, cannot be added together with the exchange values of commodities; an aggregate composed of services and material commodities, therefore, in strict Marxian terms, has no meaning. Services as such cannot be, properly speaking, the object of trade. In the so-called "purchase of services" one actually buys (i.e., hires) the commodity labor power while the enjoyment of its "service" constitutes the consumption of what is its use value.

On the other hand, there is a definite meaning to an aggregate made up of material commodities and of the commodity labor power supplying its activity, its labor, as a "service"; in this aggregation both groups of commodities are measured in terms of their exchange values, this being their common denominator. Since, in the Marxian system, the study of use values as such falls outside the scope of economic science [17, Vol. I, p. 42], Marx's exposition should be properly recast in terms of transactions involving only commodities, including labor power supplying services for final use. Part of the difficulties of Marx's interpreters may be due to this shuttling between formulations. Had Marx throughout adhered strictly to his own terminology, the exchange-value aspect of what is commonly called "services," as well as the spuriousness of the duplication problem in the counting of their incomes, would be clearly apparent.

B. Secondary Elements of a National Income Theory in Marx

In trying to further clarify his thinking on the problem of productive and unproductive labor, Marx engaged in an intellectual duel with post-Smithian writers such as Say, Ganiilh, Rossi, etc., and in the heat of battle he veered off into the problem of social overhead cost, without spelling out its relation to the productive-labor theory developed on the basis of the work of Adam Smith. While social overhead cost certainly is a problem relevant to the definition of national income, it removes the question of productive and unproductive labor to yet another plane of discussion. In these polemics Marx used the word "productive" for labor creating use values bringing positive welfare satisfactions, whether in the intermediate shape of means of production or of final consumption goods; and he reserved the word "unproductive" for labor fulfilling functions that seem to fit under a broad concept of social overhead cost. By these he understood functions the performance of which does not add to the social product (defined in what we shall call, for want of better expression, a positive welfare sense) but

the omission of which would actually or potentially add to social discomfort. A characteristic quotation: "The soldier enters into the incidental costs of production, just as many other unproductive laborers who furnish no product, either intellectual or material, are useful and necessary because of the defective organization of society"⁴ [16, p. 296].

At the same time Marx was aware of the distinction between social overhead functions and the services of "the other unproductive laborers . . . whose labor one buys to enjoy as an article of consumption at one's free disposal" [16, p. 297]. This distinction might possibly serve as a useful criterion in the problems of coverage of a positive welfare concept of national income. We shall see shortly how it was used by Abolin, one of the Soviet economists writing in the 1920's.

Another secondary problem which came up in Marx's polemics concerns the question of services which, though a source of income to their suppliers, are difficult to accept as additions to the income of society (e.g., the services of prostitutes or hired murderers). Marx did not explicitly formulate his criteria for the exclusion of such activities, nor did he make clear whether his reasons were economic or ethical.

None of these issues has been singled out as a special problem in the Soviet literature. Marx's subsidiary discussions are used, in a hodgepodge of arguments, in support of the official theory. *All* services are tacitly assimilated to social overhead cost, and the desirability of reducing their volume is invariably mentioned. Bureaucracy and administration are usually cited as examples, while the services "one buys to enjoy as an article of consumption" are conveniently ignored [8, pp. 686-687].

Marx's vague concept of "social overhead cost" harks back to his concept of unproductive functions in the production and circulation process of capital. Just as the soldier and judge add no product to the national welfare dividend, except indirectly by saving the productive laborer the trouble of having to spend time on those unproductive functions himself and thereby increasing his product and even productivity [16, pp. 306-07], in the same way the shop supervisor, the bookkeeper, the sales agent, and the capitalist as capitalist—while necessary to the functioning of capital—do not create any value. The use value or service which they supply and for which they are hired by

⁴This problem is also the subject of Marx's satirical sally on the "productiveness" of the criminal who causes an increase in national wealth by producing the entire organization of the police and of criminal justice, instruments of torture, textbooks on criminal law, inventions in the locksmith's trade and in detection techniques, etc. In this passage he touches upon the question of whether some part of the material output should be included in the social overhead cost, thus extending the problem beyond the sphere of services [16, pp. 293-94]. However, he did not follow up this point theoretically.

the capitalist, consists in helping to move the produced value from the production sphere through the circulation sphere to the point where it enters consumption, without their being capable of creating any of that value themselves. Their multiplication—unlike that of productive workers—does not add anything to output. There is no other value fund to provide for their means of subsistence, in the form of income or product, except the surplus value, i.e., the output in excess of the value of constant and variable capital, the latter corresponding to the wages and consumption of productive workers.

However, despite their similarity, from the point of view of national income definition and statistical measurement, the social-overhead-cost labor and unproductive labor employed by capital are entirely different. If we adopt a positive welfare definition of national income then we are entitled to exclude social-overhead services as not adding anything to welfare. (In doing so, we should understand clearly that the exclusion rests uniquely on a value judgement concerning their welfare potential. They are not excluded for reasons of avoiding double counting since, as before, there always will be autonomous value attached to them, i.e., value of the labor power which furnishes them.) Incomes of labor engaged in unproductive functions within the spheres of production and circulation of capital can under no circumstances be excluded from the summation, since they match a certain part of the product value, i.e., that which they subsequently buy. Whether they have created that value or merely handled it or administered the production process is irrelevant. In the Marxian scheme, all these unproductive revenues belong to the class of primary incomes, being paid out of the funds of working capital.

To return to the matter in statistical terms, if we measure the annual value added at market prices it will match the measurement in terms of charges against the product only if these charges also include wages of unproductive employees, just as they include profits. The matter remains analytically the same whether the unproductive functions are performed as part of the activities of manufacturing firms or in separate branches such as trade, marketing, publicity, consultant-ship, etc.

Present Soviet economic thinking seems to be fettered by a terminological one-word-one-concept fallacy which prevents it from noticing all the different meanings and implications of the terms productive and unproductive in Marx. Thus, concerning our last point, Soviet economists sometimes criticize the Western national income concept for including incomes from trade, publicity, etc. [8, p. 240], and at the same time feel obliged to justify their own inclusion of trade by the absence of commercial speculation under Soviet conditions, or by

the statistical difficulties of dissociating the measurement of the productive contribution of trade (i.e., distribution seen as the final stage of transportation of goods, hence of material production) from its unproductive functions ("selling as such"). But from the standpoint of Marxian theory the criticism of the Western practice is not justified and a special justification of the Soviet practice is not necessary.⁵

II. *Dissenters and Marx*

The present-day orthodoxy in national income theory probably became established some time after 1940, which was the year of publication of the last significant statement advocating a broader national income coverage [13]. The first dogmatic formulation of the current doctrine is available in two Polish articles, one by Bronislav Minc and the other by Hilary Minc, in 1947 and 1948 [20] [21]. While it is beyond the scope of this article to follow the historical course of the discussions among Soviet national income theorists, it is important to note that the advocates of broader coverage had all felt themselves to be solidly grounded in Marxian theory—and with justice.

Thus Abolin, one of the prominent opponents of the material-output concept in the 'twenties, tried to define his concept somewhat along the lines of the social product in the positive welfare sense referred to above [1] [2]. He sensed correctly that only Marx's conception of unproductiveness "in the social-overhead-cost sense" was relevant to national income definitions. Abolin recommended that those services which qualified as unproductive, i.e., as intermediate product in the social-overhead-cost sense, be excluded from the social product, and services supplying final use values be retained.

Strumilin, the other protagonist of broader concepts, at least in his writings of the 'twenties [34] [35], took as his point of departure the idea that, under socialism, the national economy becomes "one single combine" (*ediny kombinat*) in which the opposition between productive and unproductive labor is dissolved. All types of labor cooperate in the creation of the social product, the income of any category of labor is a counterpart of its contribution, in terms of labor effort, to the aggregate social product, and should therefore be counted in the valuation of the whole.

It would seem that Strumilin's conception is traceable to certain remarks made by Marx in the *Critique of the Program of Gotha*, concerning social product under socialism [19, pp. 26-29]. According to Marx, in a socialist system individual labor would form an integral part of the total social labor (*Gesamtarbeit*), supplying society directly

⁵ Moskvlin and Petrov seem to belong to the exceptions, having grasped this point [22, pp. 141-42] [26].

with use values, without the mediation of a market for commodities. This total social labor logically includes labor classified as "unproductive" in the present Soviet scheme.

The last voices to be heard in favor of broader national income concepts were those of Pashkov and Kurskii.⁶ Pashkov, realizing the absurdity of treating the income of services as transfers, wrote, in 1939:

In calculating the size of the national income of the USSR it would be incorrect to count only the net output produced in the national economy. The calculation of the national income includes the calculation of incomes of the population. And the latter consist not only of net output but also of services supplied free by the socialist state or social organizations. Doctors, teachers, and other workers who do not participate immediately in the material output of products, receive part of the social product for which they furnish society in exchange their labor in the form of services. The reproduction of the social product presupposes the reproduction of services as well; in society there takes place an exchange of activities between different workers, members of society [7, p. 75].⁷

A. Kurskii, in a 1940 review [13] of the collection of essays on national income, from which the last quotation is taken, argued forcefully against the material-output concept, basing himself on an interpretation of Marx which comes close to the one presented here:

Labor in the sphere of material output is, of course, the fundamental social force creating material wealth. However, workers and farmers could not create any material wealth without the provision of cultural, technical, and other services, on the part of our new socialist intelligentsia. Labor employed in the 'nonmaterial' sphere is an integral part of the social labor of a socialist economy. The expression 'service,' says Marx, 'is merely an expression of the particular use value furnished by labor as by any commodity whatever; but it is an expression referring specifically to a particular kind of use value furnished by labor that does not furnish service in the form of objects but of activity; but in this respect it does not differ from a machine, from a watch, for example'⁸ [13, p. 105].

After the dogmatic settlement of the issue, the area of controversy shrank to the question of how to treat passenger transportation. By official definition, passenger transportation—as a personal service—is excluded from national income. Those who favor its inclusion face the task of reconciling the material-output concept, which must not

⁶ In a recent French study, which seems to ignore the work of Abolin and Strumilin, these ultimate traces of heterodoxy are viewed as harbingers of a possible reform [6].

⁷ Paul Studenski erroneously attributes this passage, and the position expressed in it, to Strumilin [37, p. 205] [38, pp. 186, 531].

⁸ This passage from Marx [16, pp. 321-22] is referred to toward the end of Part I, Section A.3 above.

be challenged, with the personal-service character of passenger transportation. Thus, Kronrod suggests introducing for passenger transportation the new category of "material services" [12, p. 149]. Strumilin, who otherwise has given up the cause of a comprehensive national income concept, advocates a more flexible understanding of the materiality of output and assimilates the output of passenger transportation to the production of energy [36, pp. 148-49]. Further, there seem to be views in favor of inclusion on the ground that a great part of passenger transportation serves to bring workers to their place of work and thus presumably qualifies as productive [23].

As far as conformity with Marx is concerned, the issue is rather clear-cut. In *Capital*, all transportation is lumped together with other branches supplying products of a nonmaterial nature [17, Vol. II, p. 61], while in the *Theories* both freight and passenger transportation are considered as part of material production [16, p. 328]; the material character of transportation in general seems to derive, in the latter passage, on the one hand, from the technical aspect of the production process, and, on the other hand, from the change in place of the object of labor, conceived somewhat curiously as a material change. Neither of the two approaches of Marx, incompatible with each other as they are, supports the exclusion of passenger transportation: the former by putting into question the very material-output concept of national income, the latter by its classification scheme of economic branches.

Although the classification scheme of the *Theories* explicitly demands the inclusion of passenger transportation under material production, its personal-service nature apparently seems so overwhelmingly obvious that its inclusion would automatically endanger the purity of the material-output concept. If passenger transportation were admitted, it is probably feared, other services might follow. Hence, this specific question involves the entire dogma, which may explain why such a relatively minor point of controversy is being debated almost as passionately as were the basic principles during the 'twenties, e.g., in a violent polemic between Abolin and Vaisberg [1] [2] [41] [42].

III. Concluding Remarks

Although national income continues to receive, in Soviet Russia, the verbal honors due to the "supreme economic indicator," it has been overshadowed by an ever-increasing theoretical and practical interest in more comprehensive aggregates and "balances" in which services and administration take their place alongside the material output sector [15] [30, pp. 36-37] [32, p. 94]. Why, then, the insistence upon the narrow national income concept? That it could be explained

by a "fidelity to Marxism" has been refuted by its incompatibility with Marx's theories. Looking for a pragmatic explanation, E. F. Jackson suggested that the Soviets are actually applying the unstated principle according to which national income should mean "the most all-inclusive aggregate which it is the generally accepted object of maximizing" [11]. But wouldn't the comprehensive concept, if properly broken down, permit one to follow easily the growth of material output and at the same time answer many other questions in which the planners have been interested?

It seems reasonable to search for a rational motive behind what appears to be a formalistic ritual. But this search may well be pointless. The Soviet national income definition is being accorded the status of dogma; it is therefore essentially irrelevant whether, or to what extent, the content of this dogma is functional. A meaningful explanation of why such a concept was adopted, and is being upheld, would seem to belong to an economic *Dogmengeschichte*. The available material—the tone and character of argumentation used in the prewar discussions [18] [24] [41] [42]—create a strong impression, to be confirmed or disproved by closer inquiry, that the material output concept won out because of the political survival and ascendancy of those who held it, rather than because of any intrinsic suitability of the concept.

REFERENCES

1. ART. ABOLIN, "Za marxistskoe tolkovanie kategorii proizvoditel'nogo truda" (For a Marxist Interpretation of the Category of Productive Labor), *Planovoe khoziaistvo*, 1928, No. 10, 138-52.
2. ———, "Proizvoditel'nyi i neproizvoditel'nyi trud pri kapitalizme i v SSSR" (Productive and Unproductive Labor under Capitalism and in the USSR), *Planovoe khoziaistvo*, 1928, No. 8, 150-64.
3. D. ALLAKHEVERDIAN, *Natsional'nyi dokhod SSSR* (National Income of the USSR). Moscow 1958.
4. JEAN BÉNARD, "Le problème du revenu national dans la théorie marxiste," in Ch. Bettelheim ed., *Economie Politique et Problèmes du Travail*, Paris, 1949, pp. 1-35.
5. M. Z. BOR, *Balans narodnogo khoziaistva SSSR* (Balance of the National Economy of the USSR). Moscow 1956.
6. JEAN-YVES CALVEZ, *Revenu National en URSS. Problèmes théoriques et description statistique*. Paris 1956.
7. D. I. CHERNOMORDIK, ed., *Narodnyi dokhod SSSR* (National Income of the USSR). Moscow and Leningrad 1939.
8. INSTITUTE OF ECONOMICS OF THE ACADEMY OF SCIENCES OF THE USSR, *Political Economy*. London 1957.
9. E. F. JACKSON, "Social Accounting in Eastern Europe," in International Association for Research in Income and Wealth, *Income and Wealth*, Ser. IV, London 1955, pp. 242-61.

10. M. V. KOLGANOV, *Narodnyi dokhod SSSR* (National Income of the USSR). Moscow 1940.
11. G. A. KOZLOV AND S. P. PERVUSHIN, *Kratkii ekonomicheskii slovar* (Short Economic Dictionary). Moscow 1958.
12. I. A. KRONROD, *Sotsialisticheskoe vosпроизводство* (Socialist Reproduction). Moscow 1955.
13. A. KURSKII, Review of Chernomordik [7], *Planovoe khoziaistvo*, 1940, No. 1, 104-6.
14. I. LAPTEV, "Balans grubeishikh oshibok" (Balance of the Gravest Errors), *Bolshevik*, 1937, No. 7.
15. JAN MARCZEWSKI, "Le rôle des comptes nationaux dans les économies planifiées de type soviétique," in International Association for Research in Income and Wealth, *Income and Wealth*, Ser. IV, London 1955, pp. 167-241.
16. KARL MARX, *A History of Economic Theories* (original title: Theorien über den Mehrwert). New York 1952.
17. ———, *Capital*, Vol. I-III. Chicago, 1906, 1909.
18. ———, *Contribution à la critique de l'économie politique* and *Introduction à une critique de l'économie politique*. Paris 1928.
19. ———, *The Gotha Program*. New York 1935.
20. BRONISLAW MINC, "Z zagadnień dochodu narodowego" (Some Questions of the National Income), *Nowe drogi*, 1947, No. 5, 49-65.
21. HILARY MINC, "O właściwe metody planowania w Polsce" (For Correct Planning Methods in Poland), *Nowe drogi*, 1948, No. 8, 17-38.
22. P. M. MOSKVIN, *Voprosy statistiki natsional'nogo dokhoda SSSR* (Questions of Statistics of the National Income of the USSR). Moscow 1955.
23. VLADIMÍR NACHTIGAL, "Národní duchod a jeho výpočet v ČSR" (National Income and Its Calculation in the Czechoslovak Republic), *Politická ekonomie*, 1955, No. 6, 440-62.
24. A. NOTKIN AND N. TSAGOLOV, "O teorii i skheme balansa narodnogo khoziaistva SSSR akademika S. Strumilina" (On the Theory and Scheme of the Balance of the USSR National Economy, by S. Strumilin, Member of the Academy), *Planovoe khoziaistvo*, 1937, No. 4, pp. 79-111.
25. A. NOVE, "Some Notes on Soviet National Income Statistics," *Soviet Studies*, 1955, No. 3, 247-80.
26. A. I. PETROV, "Burzhuaznaia statistika natsional'nogo dokhoda v kapitalisticheskikh stranakh" (Bourgeois National Income Statistics in Capitalist Countries), in L. M. Tsyrlin and A. I. Petrov, *Burzhuaznaia statistika skryvaet pravdu* (Bourgeois Statistics Hides the Truth), Moscow 1953, pp. 141-67.
27. ———, *Kurs ekonomicheskoi statistiki* (Course of Economic Statistics). Moscow 1954.
28. ———, *Narodnyi dokhod SSSR* (National Income of the USSR). Moscow 1949.
29. ———, "Teoreticheskie predposylki ischisleniia narodnogo dokhoda" (Theoretical Premises of the Calculation of National Income), *Planovoe khoziaistvo*, 1927, No. 2, 107-32.

30. T. V. RIABUSHKIN, *Problemy ekonomicheskoi statistiki* (Problems of Economic Statistics). Moscow 1959.
31. ———, *Statisticheskie metody izucheniia narodnogo khoziaistva* (Statistical Methods in the Study of the National Economy). Moscow 1957.
32. ———, *Ocherki po ekonomicheskoi statistike* (Essays in Economy Statistics). Moscow 1950.
33. DUDLEY SEERS, "A Note on Current Marxist Definitions of the National Income," *Oxford Economic Papers*, June 1949, 1, 265ff.
34. S. G. STRUMILIN, "Narodnyi dokhod SSSR. K. metodike izucheniia voprosa" (National Income of the USSR. Comments on the Methodology in the Study of this Question), *Planovoe khoziaistvo*, 1926, No. 8, 140-63.
35. ———, "K teorii balansa narodnogo khoziaistva" (Comments on the Theory of the Balance of National Economy), *Planovoe Khoziaistvo*, 1936, Nos. 9 and 10, pp. 86-114.
36. ———, *Statistiko-ekonomicheskie ocherki* (Statistical and Economic Essays). Moscow 1958.
37. PAUL STUDENSKI, "Methods of Estimating National Income in Soviet Russia," *Studies in Income and Wealth*, Vol. VIII, National Bureau of Economic Research, New York 1946, pp. 195-234.
38. ———, *The Income of Nations*. New York 1958.
39. ——— AND J. WYLER, "National Income Estimates of Soviet Russia—Their Distinguishing Characteristics and Problems," *Am. Econ. Rev.*, May 1947, 37, 595-610.
40. "A Note on Some Aspects of National Accounting Methodology in Eastern Europe and the Soviet Union," *U.N. Econ. Bull. for Europe*, 1959, No. 3, 52-68.
41. R. E. VAISBERG, "Obshchestvennyi produkt pri kapitalizme i v SSSR" (Social Product under Capitalism and in the USSR), *Planovoe khoziaistvo*, 1927, No. 5, 126-47, and No. 6, 135-53.
42. ———, "Protiv vul'garizatsii i legkomysliia" (Against Vulgarization and Thoughtlessness), *Planovoe khoziaistvo*, 1928, No. 8, 165-86.
43. A. ZALKIND, "K voprosu o metodakh ischisleniia narodnogo dokhoda. Sozdaetsa li narodnyi dokhod v pasazhirskom transporte" (Comments on the Question of Methods of Calculating National Income. Is National Income Being Created in Passenger Transportation?), *Problemy ekonomiki*, 1939, No. 1, 137-51.

PROBLEMS AND POSSIBILITIES OF INDUSTRIAL PRICE CONTROL: POSTWAR FRENCH EXPERIENCE

By JOHN SHEAHAN*

Galbraith's lively studies of wartime price control in the United States led to a most tantalizing mixture of conclusions. They suggested the possibilities of improving resource allocation and of reconciling full employment with a high degree of price stability, but also recorded great frustration with administrative obstacles and practical results [5] [6]. It is not impossible to find good reasons for considering the case closed, but it might also be argued that postwar results without price regulation in the industrial sector have been sufficiently short of brilliant to warrant further inquiry. Our experience, limited to wartime emergencies, might usefully be supplemented by an attempt to sort out some of the consequences of the continued use of direct regulation in France.

The application of controls in France has alternated between vigorous effort to supervise pricing in most basic industries and periods of almost complete freedom for private decisions. Since 1957, regulation has been progressively relaxed. The periods of greatest interest here are those in which controls were seriously attempted on a large scale. They include such different situations as those of generalized excess demand up to 1949 and again in 1957, the recession of 1952, and the intriguing experience of balanced expansion under conditions of very low unemployment from 1953 into 1956. The discussion following considers: (1) the background and administration of the regulatory system, (2) effects on the trend of industrial prices, (3) micro-economic effects on competition and efficiency, and (4) relationships to aggregate expansion.

I. *The System of Control*

Although the French economy has long been acclimated to a considerably greater degree of governmental intervention than that of the United States, modern control of industrial prices dates only from 1936. It was established at that time to provide a means of supervising the price revisions resulting from the new social legislation of the Popular Front. The experience closely paralleled that with the NRA, and led to an even quicker movement away from regulation. But wartime controls followed almost immediately, and were reasserted in 1945 as a

*The author is assistant professor of economics at Williams College. Research for this paper was made possible by a National Research Professorship grant from the Brookings Institution.

continuing policy instrument. The administrations which have come and gone since then have included many people determined to reduce or eliminate controls, but their collective effort has done little more than create variations in the intensity with which regulations have been exercised. To quote the director of the control agency, "despite the end of grave shortages, despite a general spirit hardly favorable to the maintenance of price regulation . . . recent history shows that such regulation has a real vitality. . . . Without wishing it, perhaps without realizing it, we finally constructed, piece by piece, a solid and permanent instrument of governmental action [4, pp. 30-31]."

The system of control might be summarized by stating that the "Direction Générale des Prix," acting under the authority of the Minister of Finance, can issue orders at any time to any industry or individual firm establishing ceiling prices for their products at or below prevailing levels. In practice a complex but flexible system allows most industries a high degree of freedom most of the time.

Regulations divide industries into three main groups: (1) those subject to direct price-fixing by authority, (2) those allowed complete freedom, and (3) the Orwellian-flavored category of "controlled liberty." Firms in this third class must submit explanations of any proposed increases, or of initial prices for new products, and must delay application of the new prices for a 15-day examination period. The control agency can reject or attempt to alter the proposals, or do nothing and allow them to go into effect at the end of the waiting period. The three broad regulatory categories include numerous subdivisions to facilitate administration, but perhaps the basic point is that the control agency has the authority to alter the classification of any industry by decree.

During most of the postwar period, stricter forms of regulation have been applied to aluminum, steel, sulfuric acid, fertilizers, wood pulp, and some paper and pharmaceutical products. Industries subject to controlled liberty have included agricultural equipment, automobiles, combustion motors, household equipment, oils and paints, tires and other rubber products. Complete freedom has usually been allowed for cement, porcelain, textiles, toys, watchmaking and wood products, and in general for any dispersed group of small producers too difficult to supervise [4, pp. 39-51].¹

The control agency maintains a representative on the otherwise separate commission dealing with monopolistic practices, and endeavors

¹ Franck states that prices of steel have been free of regulation, in principle, since the establishment of the Coal-Steel Community. In practice they have remained a matter of government-industry negotiation. Cf. the series of discussions in *Le Monde*, January through March 1960, concerning company proposals, government reactions, and the final compromise decision concerning the price change of February 1960. Several of the industries listed above were granted greater freedom in August 1960 [17] [24].

to keep track of suspect cases as particularly likely candidates for strict regulation. But it would be going too far to suggest that monopolistic industries are controlled and competitive ones are not. Administrative convenience, concern with input cost changes which would become widely diffused, and consideration of the relative weight of particular products in the major price indices, cut across any division of industries by degree of competition.

Whatever the form of control applying to any group of producers, they are subject to the possibility of a general "blockage" of all prices at existing levels. Attempts to freeze all prices have been made repeatedly, but exceptions allowed for legitimate reasons to one group after another have usually rendered such attempts meaningless within a few months. The one important exception was the general freeze imposed in the 1952 recession. The usual practice is to go on dealing with specific cases and to leave the blockage in effect until its defeat is consecrated by an order for another freeze at the new price level then in existence.

In the early postwar years, the regulatory agency carried out independent studies of costs as a basis for its pricing decisions, endeavoring to set prices at levels permitting profits for firms with costs near the industry average, but not necessarily for the highest-cost producers. Authority to carry out such studies remains, but they are not now common. In the usual case, the agency is asked to judge the permissible increase that would compensate for given increases in costs. The judgment in such issues is based on cost breakdowns provided by the industries, showing the net effect of price increases for specific inputs.^{*} It is standard practice, emphasized repeatedly to unions and to firms, to refuse authority to pass on wage increases in the individual industry going significantly beyond those that have occurred or are currently being established in manufacturing generally.

Cases concerning increases in costs often also involve a related issue: the desirability of changing allowed profit margins. Under some governments, decisions have frequently forced the companies concerned to accept lower margins. More recently, governmental policy has favored increasing margins in order to encourage investment. In all important cases involving this issue, the Planning Commission, the Ministry of Industry, the Ministry of Finance, and interested governmental purchasing agencies, are consulted and play active roles in the decision process. Officials concerned with these internal debates are emphatic

^{*} The bare outlines of the formulas used and decisions taken are published in the *Bulletin Officiel des Services de Prix*. Where a given decision affects a wide variety of consuming industries, the trade associations explain in detail the methods of calculating allowed price changes. E.g. [18, pp. 35-40] explains to electrical equipment firms the implications for their pricing of the increase allowed steel companies in February 1960.

in insisting that the results constitute a balance of conflicting judgments and negotiating skills rather than any abstract optima determined by clearly defined criteria.

Decisions reached by the control agency are transmitted to a 27-man advisory board, including representatives of agriculture, business, labor and consuming groups. This "Comité Nationale des Prix" accepts most of the decisions automatically. For a few particularly sensitive items, or for any special case the Committee wishes to debate, it may undertake a general investigation and establish new policy directives. The Committee's advice is not binding but is usually followed. The price directorate thus retains wide scope for action, within broad limits set occasionally by the review board and—implicitly but fundamentally—by the cabinet.

The preceding description makes the control process sound rather arbitrary. In fact it is more so than U.S. regulation of the public utility type. Firms are protected from erratic rulings by the inevitable network of custom, common interest of all concerned in successful business expansion, interacting objectives of the government agencies participating in the decision process, political pressure, and public debate on important cases. The control agency must be able to defend its choices against highly organized trade associations devoting much effort to influencing decisions in this critical area. But the agency is less subject to the checks of judicial review and effective parliamentary inquiry than, for example, the Interstate Commerce Commission. As is generally true of business-government relations in France, executive discretion is greater than in the United States [3].

II. *Effects on the Trend of Industrial Prices*

The use of controls did not prevent markedly greater postwar price increases in France than those experienced in most other countries. The results may be divided into four periods: (1) a raging inflation from the beginning of 1945 to 1949, during which wholesale prices rose nine times; (2) a temporary lull in 1949, followed by a new inflationary outburst in 1950-51; (3) a complex period from 1952 into 1956, including a remarkable stretch of combined price stability and aggregative expansion; (4) another round of inflation, developing in the course of 1956 and culminating in 1957, followed by greater emphasis on aggregative measures to combat rising prices and lessening use of controls [22, pp. 106-76, 258-90].

1. The inflation that carried through 1948 was a straightforward case of enormous excess demand in conditions of full employment. Against a background of exceedingly liquid monetary conditions and budgetary deficits running from 30 to 60 per cent of total government

expenditure, the proportion of national product available for domestic consumption was considerably reduced by increases in the relative volume of both investment and exports [1, pp. 46-51] [10, pp. 217-38] [22, pp. 86, 125]. Attempts to check the resulting pressures by controls were not aided by any extraordinarily high level of public cooperation, but the failure should not be ascribed to a peculiarly French impatience with authority: evasion of regulation in markets experiencing excess demand is in the interest of both buyers and sellers. Rapidly rising prices in these markets pulled up material costs and helped build up wage pressure in the sectors more amenable to control, making restraints there scarcely more effective. It is a moot question whether temporary local successes by the control agency reduced the rate at which price and wage increases interacted on each other or made the inflation worse by creating an added handicap to supply adjustments.

2. The renewal of inflation that began in 1949 and carried into 1952 was a different experience with an interesting end result. Controls were relaxed at the start of this period, in the belief that the worst supply shortages were over. Prices began to rise with the first signs of recovery from the brief 1949 recession, caught fire in the general Korean-War inflation of 1950, and then kept on going up after world demand and raw material costs eased in early 1951. Signs of lessened pressure on productive capacity began to appear in the second half of 1951, and unemployment began to rise from November.³ Wholesale prices of industrial goods leveled off but did not fall, while wages and retail prices kept moving up rapidly until they were attacked directly in March 1952.

3. The government's approach to the situation in March 1952 was not sophisticated. Although signs of recession were developing, retail prices were still rising, wholesale prices had stopped shooting up only in January, and unemployment was not over 2 per cent of the labor force.⁴ In the belief that the main objective of policy was to fight inflation, and that the way to do it was to reduce prices, the government attempted to do exactly that. Some industries were ordered to reduce

³ The indicator of unemployment used here is the seasonally adjusted series for unsatisfied requests for work [21, pp. 330-34].

⁴ The French government does not publish any measure of unemployment as a percentage of the civilian labor force. Estimates in the text are based on INSEE sample surveys taken in October of 1952 and 1954, extrapolated to other dates by use of the monthly series of unsatisfied requests for work as an index. The 1952 survey indicated an unemployment ratio of 1.6 per cent [28, p. 72]. The monthly series of requests for work demonstrates that the level of unemployment in the first half of 1952, when prices were successfully reduced, was less than in October. This monthly series, generally used as the indicator of unemployment in France, considerably understates the actual level [22, pp. 34-58] [27]. The sample data basic to the estimates here are free of the main factors causing understatement in the monthly series, but the latter's weakness makes the extrapolations away from the survey dates most uncertain.

their prices, negotiated decreases were worked out with major trade associations and retail chains, and everyone else was asked to make voluntary reductions. On its side, the government undertook to hold down taxes, while its expenditures continued to rise. The budget deficit rose from 2.7 per cent of GNP in 1951 to 4.5 per cent in 1952 [22, pp. 198, 291]. The government fed increased money income into the economy through the deficit, while raising the real purchasing power of its addition to money income and of existing cash balances.

If the behavior of prices had been an accurate indicator of a basic situation of excess demand, the policies adopted would have been explosive. In fact, demand moved slightly downward, both because it was headed that way in the first place and because the check to retail prices discouraged speculation in inventories. The cost of living fell 3.4 per cent between March and June. It stayed below the March 1952 level until the end of 1956.

The available interpretations of this 1952 operation stress that the government was lucky: the demand situation was about to bring prices down anyway [1, pp. 68-79] [11]. The fact that demand pressure and raw material costs had been easing for some time without bringing prices of industrial products down does not invalidate this suggestion. Prices may simply have been making lagged adjustments to the cost increases of 1951, notably to the general increase in wage rates implemented in September.

It is not possible to be sure whether the actions taken in 1952 just happened to coincide with a price reversal that was about to occur, or that they secured a correction that might have taken a good deal longer to work out without the direct intervention. But perhaps the point of chief interest is that a situation of rising prices and low unemployment was *not* treated as one requiring aggregative deflation. The direct attack on prices worked because their increases were not in fact accurate indicators of genuine scarcity. The lack of any real pressure on prices after they were reduced by authority suggests both that: (a) arbitrarily raised prices provided scope for arbitrary reductions, and (b) unemployment below 2 per cent of the labor force can be consistent with price stability, if there are no specific shortages and if price increases in the absence of shortages are prevented.

It is not surprising that retail prices stayed down in 1952 and the first half of 1953 while the recession continued. It is of greater interest that they did not rise promptly with the recovery beginning from mid-1953, and in fact stayed down through two subsequent years of rapid expansion with very low unemployment. It might be suggested that this is what could be expected to happen in any competitive economy: prices fell in conditions of excess capacity, and did not move back up until

pressure on capacity became strong again. This is probably what would happen in a thoroughly competitive economy but this is not what prices have usually done in the French economy. Apart from the experience under discussion, industrial product prices rose along with each increase in production, and stabilized or continued rising in recessions. In this one instance, controls helped move prices more in the manner they would have if they were set under competitive conditions.

From December 1953 to December 1955 industrial production increased 18 per cent. The index of retail prices of industrial goods rose 1 per cent, and that for wholesale prices of industrial goods fell .5 per cent. As measured by the census of May 1954, unemployment near the start of this period was only 1.8 per cent of the civilian labor force. As measured by the employment survey of October 1954 it was 2.3 per cent (see footnote 4). Judging from the higher benchmark, the unemployment ratio was down to 1.9 per cent by September 1955, 1.2 by September 1956, and 1.0 by September 1957. The situation in the latter part of 1956 and 1957 was unambiguously one of excess demand. The 1954-55 unemployment ratios, though low by U.S. standards, proved consistent with both a high degree of price stability and rapid expansion of production. This performance was aided by stable raw material prices. It was not purchased by a rising import surplus: in overall trade, a small deficit was replaced by a small export surplus; in trade with countries outside the franc zone, the value of exports relative to imports rose from 79 per cent in 1953 to 93 per cent in 1955 [22, pp. 239, 266-90, 304-9].

4. In the course of 1956, with the full weight of the Algerian war added to the previous close balance, the situation again turned toward outright excess demand. This was signaled by a deterioration of the external balance and by spreading bottlenecks, rather than by rapidly rising prices. A survey of production conditions in November 1956 indicated that practically all firms were operating at the maximum rates possible.⁵ The retail price index did not clearly express the demand situation because it was systematically falsified. Selective subsidies and detaxation of items in the index were used to hold it down, feeding basic inflationary pressures in order to maintain the pretense that

⁵ *Etudes et Conjonctures* carries periodic reports concerning unused capacity, obtained from INSEE sample inquiries on the outlook and intentions of business management. This series provides a measure of "the proportion of firms declaring that they could increase production if they had more orders," not of the ratio between idle and total capacity. The survey applying to the end of October 1959 did include both types of information [20, pp. 179-98, tables p. 185]. At that time 77 per cent of the reporting firms declared that they could increase production, but their evaluation of the percentage increase in production possible was only 14 per cent. The lowest point ever recorded by the continuing series was that for Nov. 1956, when only 3 per cent of the firms sampled said that they could increase production.

they were under control. Controls were converted from a check against arbitrary price increases into an instrument for forcing industry to absorb rising costs through lower margins. The preceding improvement of the trade balance was radically reversed [22, pp. 239-40, 265] [19, p. 75]. As in the early postwar years, particularly intense efforts to enforce regulation in a situation calling for aggregative deflation only added to the fundamental difficulties and soon broke down.

In the latter part of 1957 emphasis shifted toward aggregative deflationary measures. Subsidies aimed at the price index and reliance on direct controls were both reduced. The process of moving away from controls continued in 1958-60. The INSEE surveys of available capacity have indicated that most firms could readily have increased production at any time since 1957. Hourly wage rates have risen less rapidly than in 1954-55. But prices of industrial products have risen persistently. For 1959, this is explicable in terms of increased import costs resulting from the devaluations of 1957 and 1958, combined with a high rate of growth in production. But the increase in prices in 1960, when costs of imported materials fell and output grew more slowly, may be an indication that the maximum rate of expansion consistent with price stability has shifted downward with the reduction of controls.

III. *Effects on Competition and Efficiency*

In one of the best recent books on problems of monopoly and competition in France, Jacques Houssiaux makes a forceful case for elimination of price control on the ground that it favors oligopolistic collusion [8, esp. pp. 200-201] [13]. His evidence on the structure and performance of French industries indicates that concentration is in most cases lower than in the United States, but widespread agreements serve to moderate competitive pressure and maintain market shares. He suggests that controls favor collusion because they lead to a negotiation process in which trade associations can easily serve as instruments for moderating competition, and because the establishment of official ceilings provides a focus for individual quotations which might otherwise have differed. He also argues that these negative effects are not counterbalanced by any genuine success in blocking increases that firms believe to be in their interest: that the trade associations dominate the control process.

Without denying the significance of Houssiaux's suggestions, two countering qualifications seem to be necessary: (a) most of the clearly competitive industries have been free of controls, and (b) some of those under strict regulation have well-established records of effective collusion, long antedating price control. France does not have a tradition of attempts to enforce competition. An agency was created in 1953 to

survey business practices and to attack harmful restraints on trade, but the commission was allowed to stop functioning again in 1959 [7] [8, p. 111] [23]. Important industries are permitted such techniques as joint-selling agencies, market-sharing agreements, and group decisions on pricing, as long as the commission does not decide that a particular industry is acting in a manner clearly harmful to the public interest. The general point that industries in which firms exhibit independence in their pricing decisions should be left free of controls remains valid, but this category does not include all manufacturing industries in France.

The suggestion that prices evolved much as they would have done in the absence of controls is most difficult either to support or to refute. For the periods of open inflation up to 1952, the changes were so violent and so general that regulation can hardly be considered to have had more than temporary delaying effects. The period of greater interest is again that of 1952-57, in which controls were actively enforced through successive conditions of recession, recovery, and continuing expansion in conditions of full employment. Two nonconclusive tests indicate that controls did affect pricing significantly in these years: the trend of profits relative to sales was not consistent with normal expectations for uncontrolled markets, and the pattern of price change was systematically different from that for U.S. industry during the same period.

The movement from conditions of recession in 1952 to a situation of excess demand in 1957 should in principle have acted to raise ratios of profits to sales in most industries. In the aggregate, for all firms subject to regular profits taxation, the ratio of net profit to sales fell from 3.9 per cent in 1952 to 3.6 per cent in 1957.⁶ Profit margins were driven down fairly steeply in some industries despite pronounced increases in sales (notably for machinery and for electrical equipment), at the same time as they were rising in others (including nonferrous metals, automobiles, chemicals and textiles). In general, profit margins rose in those competitive industries not subject to control, and in those controlled industries which secured unusually rapid gains in productivity. Controlled industries for which productivity gains were not exceptionally rapid were apparently subject to a genuine squeeze. This is not to argue that the effect was desirable; it is only to refute the suggestion that controls were not able to affect the pattern of pricing.

Comparison of the pattern of price changes in 1952-57 to that in the United States in the same period reveals some suggestive contrasts.

⁶ Data here refer to firms subject to the "régime du bénéfice réel," which includes all medium and larger enterprises, accounting for 91 per cent of sales by all reporting firms in 1957 [26].

Such a comparison is handicapped by differences in classification of data, and above all by the scarcity of official indices for narrowly defined groups of industrial products in France. Table 1 presents a small sample intended to bring out the contrasts without being deliberately misleading; a definitive comparison remains impossible without more data on specific French industry groupings.

To anticipate two relevant questions concerning the above comparison, output of French manufacturing increased more than twice as

TABLE 1.—CHANGES IN WHOLESALE PRICES FOR SELECTED MANUFACTURING INDUSTRIES, FRANCE AND THE UNITED STATES, 1952–57

	Per Cent Increase in Price Index	
	United States	France
Primary metals	30	9
Electrical machinery	19	–6
Motor vehicles	13	3 ^a
All manufacturing	9	0.4
Chemicals	5	–8
Leather products	4	7
Textiles	–7	–3

* The French index for motor vehicles is based on retail rather than wholesale prices, but retail margins were fixed and dealer concessions rare in this period, maintaining a close correspondence between changes in wholesale and in retail prices.

Sources: *Bulletin Mensuel de Statistique* for all French prices except electrical machinery; Syndicat National de la Construction Electrique, "Rapport Statistique, 1959" for electrical machinery; Levinson, "Postwar Movement of Prices and Wages in Manufacturing Industries," Study paper no. 21, prepared for the Joint Economic Committee, *Study of Employment, Growth and Price Levels*, January 1960, p. 14, for American prices.

rapidly as that of U.S. industry in the period considered, and hourly wages in manufacturing rose 36 as against 24 per cent in the United States [25].

During this period of active control, the dispersion of price changes was considerably less in French than in U.S. manufacturing. The range from greatest increase to greatest decrease was only 17 percentage points, compared to 37 in the United States. Taking primary metals as a central objective of control and an area in which it was most easily exercised, it is noteworthy that this stood out on the high side in France as well as in the United States. The only difference was that it did not stand out so far. Leather products and textiles present the opposite situation of relatively dispersed production structures, not in fact subject to close control. In both these cases, and in no others, French prices rose relative to those in the United States.

The data cited do not prove that price regulation changed the course of events. In the first place, independent choices of firms, guided by

competitive objectives, may have been more important than controls in holding down prices in some industries. This was definitely the case in the automobile industry [16]. In the second place, differences in factor-cost changes were such as to favor the pattern of pricing indicated. The restraint on prices of primary metals itself acted to hold down costs for all the metals-using industries. The pattern of wage changes had the same effect, and is worth considering in more detail.

The recent study of costs and prices in American industry by Schultze and Tryon concluded that the evolution of unit labor costs was better explained by differences in productivity gains than by differences in wage rates, except for five important cases [14, pp. 42-45]. Their exceptional cases included the two extremes in the table above: primary metals (where wages stood out on the high side), and textiles (where the wage increase was below average and the productivity increase above). One of the key differences in France is that there are no exceptional cases in this sense. Hourly wage increases have differed moderately among industries, but the degree of dispersion has been much smaller than in the United States: differences in unit labor costs are more fully explained by differences in productivity, because the dispersion of wage increases is more limited [15]. The fact that the structure of wage change in France favored the pattern of price change observed does not mean that the former determined the latter. Regulation was explicitly used as a warning device against firms or industries tending to raise wages markedly faster than the general pace, and may have been responsible in part for the relatively low spread among wage increases. This factor was surely of secondary importance in determining the wage pattern, but it probably did help shape the evolution of wages as well as prices.

The faster pace of wage increases in France in the period discussed was offset by more rapidly rising output per man hour, in turn made possible by the greater rate of increase in production. Comparison of changes in labor productivity indicates that the improvement in France relative to that in the United States was particularly high for primary metals and for motor vehicles, and considerably lower for textiles, clothing, food processing, and chemicals [15]. These structural differences are consistent with the possibility that selective application of controls to highly concentrated industries little inclined to price competition may, by making it more difficult to pass on wage increases, help shift the effort of firms somewhat more toward cost reduction as a means of raising profits.

For competitive industries, arbitrarily set prices surely do distort resource allocation and lessen efficiency. Where an economy is split into competitive and noncompetitive producing groups, both prices and

wages in the latter move too high relative to their levels in the competitive industries. Price control limited to the minority of noncompetitive industries, checking their profit margins and holding their wage increases in line with opportunities elsewhere, may in principle improve allocative efficiency. As practiced in France, controls did not make any such neat distinction. But, by the accident of the fact that highly concentrated industries are easier to control, they may well have held prices and wages in a pattern more nearly consistent with efficient resource allocation than would have resulted in the absence of controls.

IV. *Relationships to Aggregative Expansion*

Regulation of prices was definitely not fatal for the growth of manufacturing output. From 1950 to 1959 the index of industrial production rose 71 per cent, slightly above the expansion rate for all OEEC members (64 per cent), and markedly above that in the United States [25]. This vigorous performance cannot in any sense be explained by changes in the efficiency of the pricing system, but it is of some interest to consider the treacherous question of the effects of regulation on the rate of expansion.

In the periods of strong excess demand through 1951, controls did no more than provide a temporary impediment to increases in the sectors more readily supervised. Their incidence was thus focused on the more organized industries. They may well have hampered investment selectively in such sectors, impeded the transfer of resources to the more productive areas of the economy, and favored the survival of inefficient operations beyond the reach of regulation. In so far as effective at all, they deflected the flow of income and control of resources from firms toward consumers, restraining investment and the possible rate of economic growth.

In the recession of 1952 and the subsequent period of balanced expansion, controls cannot be considered to have been uniformly negative. In 1952, the temporary decline in sales created excess capacity and reduced investment demand. Price increases in this situation would have altered the flow of funds from recipients with a high propensity to spend toward business firms eager to improve liquidity and uncertain about the desirability of further investment. In so far as controls checked the ability of noncompetitive firms to implement price increases in such conditions, they may well have sustained aggregate demand and facilitated recovery.

In 1954-56 the expansion proceeded in conditions of full employment and generally restrained industrial prices. As noted above, the restraints brought down profit margins (though not absolute profits), in the aggregate and particularly in capital equipment industries. Since

this was a period of general pressure on capacity, it may be assumed that an increase in the flow of income to firms would have raised investment [2] [12]. Blocking price increases for industries operating at capacity and endeavoring to raise investment favored current consumption at the expense of growth. Moreover, the squeeze on profits was particularly pronounced in the machinery and electrical equipment industries, focusing the negative effects in a manner restraining the increase in capital equipment. Recourse to imports to the extent permitted did act to ease this bottleneck, but they in turn contributed to the heavy balance-of-payments deficits of 1956-57.

The combination of strong demand conditions with restraint on profits did prove more favorable for investment than the initial 1952 combination of weaker demand and higher profit margins: fixed capital formation rose slightly faster than GNP while profit margins were being squeezed [22, p. 291; supplement, p. 13]. But the rise in investment relative to GNP was only from 16.5 per cent in the 1952 recession to 19.3 per cent in the 1957 boom. It remains probable that the economy's supply ceiling would have risen faster if higher prices had cut into consumption and allowed greater investment.

In a sense, price control under conditions of excess demand provides an alternative to monetary policy as a means of checking investment. It does reduce the funds available for investment financing, perhaps more effectively than ordinary credit rationing or high interest rates. But the net result is not the same. This technique allows purchasing power of households to gain to the extent that firms are restricted. It is not a deflationary instrument, but a means of favoring consumption at the expense of investment.

While controls were outrightly unhelpful in conditions of genuine excess demand, they need not have been harmful for growth during the years when aggregate demand and supply rose in close balance. Their worst aspect was that they squeezed profits and held down investment in the capital goods industries, where demand did exceed supply. If they had been administered under a rule allowing freedom for those industries subject to excess demand, while maintaining a check for those noncompetitive industries for which supply remained adequate, the price level might have risen earlier but resource allocation would have been improved. The restraint was overly general. Its negative side became more important as more industries passed into the category of bottlenecks with the surge of demand in 1956-57. Up to that point, the positive side of price supervision was quite real: it made clear that a situation of rapid growth with unemployment on the order of 2 per cent of the labor force was not in fact one of excess demand requiring deflation.

V. Conclusions

Regulation of industrial prices in France has had such varied and contradictory effects that any judgment as to whether the balance has been harmful or not must be highly arbitrary. One basic distinction does help clarify the results. When used in conditions of general excess demand to hold down the price level, direct controls hampered efficiency, restricted investment, and did not achieve any positive objective. Used to check arbitrary price increases in the one period when demand and supply were in close balance at low levels of unemployment, they did help preserve a condition of rapid expansion without inflation. In this favorable period their application to concentrated industries created a pattern of price change markedly different from that in the United States. This pattern might well be judged to have come closer to a competitive structure than that in the United States, in the sense that regulations in general bore down on the less competitive industries, keeping their price and wage changes more in line with those in the competitive sectors. Controls caused nothing but trouble when applied to industries for which demand exceeded capacity to supply, but they did help avoid false signals of inflation deriving from market power of sellers rather than genuine scarcity.

REFERENCES

1. WARREN BAUM, *The French Economy and the State*. Princeton 1958.
2. JAMES DUESENBERY, *Business Cycles and Economic Expansion*. New York 1958.
3. HENRY EHRLMANN, *Organized Business in France*. Princeton 1957.
4. LOUIS FRANCK, *Les Prix*. Paris 1958.
5. J. K. GALBRAITH, "The Disequilibrium System," *Am. Econ. Rev.*, June 1947, 37, 287-302.
6. ———, *A Theory of Price Control*. Cambridge, Mass. 1952.
7. ROBERT GOERTZ-GIREY, "Monopoly and Competition in France," in E. H. Chamberlin, ed., *Monopoly and Competition and Their Regulation*, New York and London 1954, pp. 21-42.
8. JACQUES HOUSSIAUX, *Concurrence et Marché Commun*. Paris 1960.
9. ———, *Le pouvoir de monopole*. Paris 1958.
10. J. M. JEANNERET, *Forces et faiblesses de l'économie française*. Paris 1956.
11. J. LAUX, "M. Pinay and Inflation," *Pol. Sci. Quart.*, March 1959, 74, 113-19.
12. J. MEYER AND E. KUH, *The Investment Decision*. Cambridge, Mass. 1957.
13. PAUL REUTER, "A propos des ententes industrielles et commerciales," *Droit Social*, Jan. 1953, 16, 1-12.
14. C. L. SCHULTZE AND JOSEPH TRYON, "Prices and Costs in Manufacturing Industries," Study paper no. 17 prepared for the Joint Economic Committee Study *Employment, Growth and Price Levels*, Jan. 1960.

15. JOHN SHEAHAN, "Evolution de la productivité et des salaires en France et aux Etats-Unis depuis 1950," *Bull. SEDEIS*, July 1, 1960, suppl.
16. ———, "Government Competition and the Performance of the French Automobile Industry," *Jour. Indus. Econ.*, June 1960, 8, 197-215.
17. *Bulletin Officiel des Services de Prix*, August 2, 1960.
18. *La Construction Electrique*, May 1960, pp. 35-40.
19. *Etudes et Conjonctures*, Aug.-Sept. 1959.
20. ———, March 1960.
21. ———, April 1960.
22. Institut National de la Statistique et des Etudes Economiques, *Mouvement économique en France de 1944 à 1957*. Paris 1958.
23. *Journal Officiel, Documents Administratifs*, 1960, no. 1, 2, 11.
24. *Le Monde*, August 3 and 4, 1960.
25. Organization for European Economic Cooperation, *General Statistics*.
26. *Statistiques et Etudes Financières*, March 1955 and May 1960, "Les Bénéfices Industriels et Commerciaux."
27. Federal Reserve Bank of New York, "International Comparability of Unemployment Statistics," *Monthly Rev.*, Mar. 1961, 43, 47-51.
28. INSEE, *Annuaire Statistique, 1952*. Paris 1953.

EQUILIBRIUM GROWTH MODELS

A Review Article

By JOAN ROBINSON*

Models are customarily set out with the assumptions at the beginning and the conclusions at the end, but this is not how they are built. An author starts from some doctrine which he wishes to defend or some proposition that he hopes to establish, and sets about finding the least implausible-looking assumptions that will lead to the conclusions that he requires. (A professed empiricist might think this queer, but he is doing much the same thing when he picks the headings for the columns in which his figures will be grouped.) Once the assumptions have been found, a return journey towards the conclusions must be made, and in the course of it the author (or a critic tidying up after him) often discovers logical relationships which he did not yet know of; thus fresh explorations are made in the process of establishing foreknown conclusions.

Professor Meade has added one more to the troop of long-run macrodynamic models of growth in a pure free-enterprise economy.¹ There are now a sufficient number of them roaming around to make it possible for us to map out the logical field in which they move.

For such a survey, the familiar formula, $g = s/v$, is not a good starting point. If we take it as an *ex post* accounting identity, we have to define its terms (as with other truisms, such as $S = I$ or $MV = PT$) in such a way as to beg all the questions that are to be discussed. As the statement of *ex ante* equilibrium conditions, it fails to isolate the independent variables; s , the ratio of annual net saving to annual net income, is strongly influenced by the ratio of profits to income, which in turn is strongly influenced by the ratio of annual net investment to the value of capital, that is, by g itself; v , the ratio of value of capital to annual net income, is influenced, both through the prices of capital goods and through the choice of technique, by the rate of profit, which is a function of s and g . All the formula can say is that, if growth is going on under equilibrium conditions at the rate g , then s/v is equal to it.

Harrod, certainly, whatever his warranted rate of growth was supposed to mean, did not intend to throw away the *General Theory* and make savings govern investment. What his theory reveals is something much more interesting than this barren formula. What he shows is that, if we write down a function for the inducement to invest (whether in terms of the accelerator, or of expected profits, of the supply of finance, or just of the animal spirits of the managers of firms) generating a desired rate of growth, and a set of technical conditions (the labor supply, the flow of new inventions and so forth) provid-

* The author is Reader in economics, University of Cambridge.

¹ J. E. Meade, *A Neo-Classical Theory of Economic Growth*. London: George Allen & Unwin, 1961. Pp. ix, 146. 25 s.

ing a "natural" or better, a physically possible rate of growth, and, furthermore, postulate equilibrium with full employment, we have overdetermined our system.

There are three ways of getting out of the impasse. One is to give up the idea of equilibrium and exhibit an economy blundering on from one situation to another (as happens in the history of the world we live in) following no simple predictable path. The second is to introduce a functional connection between the desired and the possible growth rates so that one determines the other. The third is to give up the desired rate of growth and simply assume that actual growth goes on, in equilibrium conditions, with continuous full employment of available labor.

Harrod himself sketches very sketchily growth paths of the historical type. (Because of the peculiar inducement-to-invest function that he uses, they are wildly erratic.) My "golden age" has been criticized for just what I regard as its chief merit—that it is not an equilibrium path. It is a special case of an imagined historical path in which the desired rate of accumulation, the physically possible rate and the initial conditions happen to be in harmony; its use is to illuminate the causes and consequences of various kinds of disharmony.

Kaldor follows the second method [4]. His technical-progress function permits the desired rate of growth to bring the possible rate into equality with itself. Though he uses the language of history, he argues in terms of equilibrium. His equations describe a golden-age path which the economy, when not already on it, is seeking to reach, moving from any given starting point along a determinate route at a determinate pace. Kahn [2] shows how we can construct a model which achieves equilibrium the other way around, by making the possible rate of growth control the desired rate via the mechanism of the supply of finance, provided that the desired rate is sufficiently high and sufficiently interest elastic. Duesenberry [1] works out an equilibrium path for desired growth and trusts to a kindly Providence to keep the possible rate in line with it.

Meade's new model is frankly of the equilibrium persuasion. The rate of investment is always equal to the full-employment rate of saving, the demands for labor and other means of production are equal to the available supplies and perfectly competitive prices rule. He gives a token explanation in terms of interest policy and the behavior of money wages, but it is evidently not to be taken to mean anything more than a postulate that equilibrium is always maintained.

Before discussing his particular assumptions, let us consider in general what full-employment, competitive equilibrium implies. The basic conception is that full employment of available labor obtains at every stage of the accumulation of capital. Taking as given the technical conditions, the supply of labor, and the propensity to save from each type of income (the thriftiness conditions, for short) there is an equilibrium relationship between the stock of capital in existence in any particular position and its rate of growth. Thus, if we specify a particular rate of growth (which in the special case of a stationary state is zero) the equilibrium stock of capital is indicated; if we specify a stock of

capital, the equilibrium rate of growth is indicated. Moreover, in any position that we chose to examine, with a certain labor force in existence and a certain rate of growth going on in the labor force and in the over-all value of capital per man employed, the postulate of equilibrium entails not only the over-all value of the stock of capital but its precise composition. In particular the stock of durable equipment in existence must be of the amount and form appropriate to the rates of output being produced.

Competitive equilibrium implies a uniform rate of profit throughout the economy. Thriftiness conditions and the rate of accumulation determine the level of the current rate of profit at each moment. This, combined with the physical rates of output, determines all prices in terms of money-wage units, and so determines real wages.

Given an equilibrium situation, output and consumption today determine what stocks of goods of all kinds will be tomorrow, and the stocks today determine what output and consumption must have been yesterday. The present position, combined with the postulate of continuous equilibrium, decrees what the situation will be at any date in the future, and entails what it was at any date in the past. The model is "a creature that moves in determinate grooves—not even a bus, but a tram."

Kaldor has professed himself unable to see "where marginal productivity comes in" [3]. Certainly there is no room here for the view that the marginal product of labor directly influences the wage bargain. (Well, my man, I see that your marginal product has gone up and I am glad to give you a raise.) As for the marginal product of "capital," no one has yet told us even what it is intended to mean. But all the same there is a certain sense in which marginal products clearly do come in. One of the conditions of equilibrium is that no firm, given today's prices and prospects, is using one technique of production when another would have been more profitable. This conception can be expressed in an *ex ante* microproduction function in terms of labor, value of capital per man and value of output.

The "degree of mechanization" of different techniques can then be shown by their relative positions on the *ex ante* production function expressed in terms of value at constant prices. The marginal productivity of each factor, as between one technique and another *at constant prices*, then has a definite meaning. One technique offers a higher output per head, compared to the next below it, in virtue of a higher cost of capital per man. The extra output is the marginal product of the extra investment. The less mechanized technique offers a higher output per unit of investment in virtue of more labor to be employed per unit of value of capital. The value of the extra output, plus or minus the difference in other costs required to produce it, is the net marginal product of the extra labor. To say that the correct technique is chosen means that the net marginal productivity of each factor, in this sense, to the individual firm, is not less than the marginal cost of employing it.

The assumption of continuous equilibrium is very exacting. For instance, when the path that the economy is following entails a falling rate of profit on capital over the future, investment which is being made today in long-lived installations will be designed for a more mechanized technique than would

have been chosen if today's rate of profit were going to continue, while very short-lived investments will be appropriate to nearly today's current rate.

The choice of technique on these principles, of course, has little bearing on actual investments made in the rough and tumble of real life. An equilibrium system, by its very nature, is cut off from reality. It is useless to interpret history in terms of it and illegitimate to appeal to history for evidence to support it. All it can do is to display the logical relations generated by its assumptions.

Once we have laid down a set of assumptions, it is easy enough to run the model along its tram lines. As general simplifications, postulate a closed economy in which wages and profits exhaust total income; no economies of scale or scarce natural resources; a constant labor force; and (for convenience in exposition) a clear-cut distinction between capital equipment and consumption goods, so that output and employment are exhaustively divided into a consumption-good and an investment sector. Some simple cases may be distinguished.

1. There is no technical progress, so that the set of *ex ante* production functions, though changing with prices, retains its physical characteristics. The technical conditions exhibited in the production functions, with specified thriftiness conditions and constant employment, determine a particular stationary state in which the total amount and form of the stock of capital goods, the rate of profit on capital and the real wage are compatible with zero net saving.

With any value of capital less than that appropriate to the stationary state, accumulation is taking place. Choosing assumptions about the production functions congenial to the neoclassical point of view (a continuously falling output/capital ratio associated with a rising capital/labor ratio) and assumptions about thriftiness congenial to a Keynesian point of view (the ratio of saving to income falling as the share of wages in the value of output rises) we find that a lower value of capital is associated with a higher rate of profit and a faster rate of accumulation. The economy is following a determinate path with the value of capital per man, the real wage rate and the value of output per man rising, the pace of accumulation decelerating and the rate of profit on capital falling. The stationary state is the asymptote to the path that the economy follows. This is the process usually described as "deepening" investment.

We can compare several economies described by the same equations, all following a single path through infinite time, but each with a different stock of capital "today." Then they are all pursuing each other; that with the smallest stock of capital has the fastest rate of growth and the sharpest deceleration; it will never pass the one above it; by the "date" when it has the same stock of capital as that one has today it will have slowed down to the pace at which that one is moving today.

With the assumptions that we have chosen, the value of capital per man (all values being reckoned in terms of a basket of consumption goods) is continuously rising and the rate of profit on capital continuously falling. The value of output per man is continuously rising and so is the real-wage rate.

The share of wages in the value of net income may go either way. By the same token, net investment per unit of capital is continuously falling and capital per unit of income continuously rising. The value of net investment per unit of income may go either way. The same feature of the situation that would make the share of wages rise—*ex ante* production functions along which substitution of capital for labor is sticky—would make income per unit of net investment rise. Thus the share of wages and the ratio of saving to income that goes with it is in harmony with the ratio of investment to income required to keep the model on its equilibrium path.

There is no particular virtue in the case of a constant relative share of wages. It does not correspond to any simple kind of technical condition such as can be expressed as a unit elasticity of substitution between "factors of production," since the share depends on a mixture of technical relations (such as can be shown in *ex ante* production functions at given prices) and the effects of the price changes associated with a changing rate of profit.

2. For our second example we drop the *ex ante* production functions and introduce technical progress. At each moment of time there is one best technique for each product considered separately, which would be chosen for new investment whatever the wage rate, but fresh superior techniques are continually being discovered, so that each round of gross investment goes into a different form.

For present purposes neutral technical progress can be sufficiently described by saying that it makes possible a rise of output per head of consumption goods while requiring an unchanged cost in terms of wage units of equipment per man employed (though unfortunately Meade uses a different, and highly idiosyncratic, terminology). When output is growing at the rate given by technical progress (with constant employment), this entails a constant value of the stock of capital in terms of wage units (as Harrod pointed out long ago). Since equilibrium requires the real wage rate to be rising at the growth rate of the system, the value of the stock of capital in terms of consumption goods is growing at the same rate.

A steady rate of neutral technical progress, in this sense, provides a ceiling, like the stationary state in the first example, with a constant capital/output ratio (in value terms) and a constant rate of profit on capital. It has the characteristics of what I have called a golden age.

An economy in which technical conditions develop in the same way as those depicted on the golden-age path, but which has a lower value of capital per man, has a higher rate of accumulation than that appropriate to the golden-age path and is decelerating towards it. The path that the model follows is then a sort of pursuit curve approaching asymptotically to the golden-age path. To fill in the details we must specify the length of life of equipment of various kinds, so as to be able to say, at any given point on the pursuit curve, how many generations of older, less productive, equipment are in existence and so what is the average productivity of labor at that point.

3. A capital-saving bias in technical progress means that the cost in terms of wage units of equipment per man falls as time goes by. At the ceiling, when thriftiness conditions are such as to require a constant rate of growth of the

value of capital, output is growing at a constant, faster rate. (This is what I have called a quasigolden age.) There is then a constant rate of profit on capital, the real wage is rising faster than output per head of consumption goods, labor is being drawn out of the investment sector into the consumption sector and the value of the stock of capital goods in terms of wage units is falling. (The psychology of capitalists, expressed in the thriftiness conditions, must be such as to permit this to occur; otherwise a chronic condition of scarcity of labor would be set up by the competition for hands between the two sectors.) The case of a capital-using bias can be described symmetrically, with labor moving out of the consumption sector into the investment sector.

4. To combine elastic *ex ante* production functions with neutral technical progress makes no difference as far as the ceiling is concerned. Neutrality means that the *ex ante* production functions are rising iso-elastically to themselves, so that the capital/output ratio corresponding to a given rate of profit remains constant. Since the rate of profit on capital is constant on the golden-age path, techniques of the same degree of mechanization are chosen from the successive sets of *ex ante* production functions. There is no call for a movement "along" them, and their shape has no effect. Relative shares and the division of the labor force between sectors remain constant, as before. The real wage rate rises in step with output per head.

5. To combine technical progress which is unevenly distributed between the sectors with elastic *ex ante* production functions introduces some complications. In such a case a capital-saving tendency in technical progress may be combined with "deepening" investment. This opens up a wide range of possibilities. We may, if we please, select a set of assumptions that make the two tendencies (capital saving bias and increasing "depth") just balance, so that the capital/output ratio and the division of the labor force between the sectors remain constant. This produces the same effect as a golden age with neutral technical progress. The rate of profit on capital and the share of wages in the value of output remain constant while the system grows at a steady rate. This is our author's favorite case, as we shall see.

Meade's prime object is to demonstrate that the movement along an equilibrium path can be described in terms of the marginal physical productivities of factors of production. To do so, he lays down a formidable barrage of special assumptions.

There are two products, a consumption good, let us call it a shirt, and a capital good, steel. We can easily accept a notional shirt as an index of the physical output of consumer goods. What is "steel"? The author tells us that it "can be made into machines of different forms to suit the current state of technical knowledge and to suit the ratios of labor and land to machines which the current cost of the different factors makes possible; but we have assumed that the tonnage of steel incorporated in any machine can in the short run as well as in the long run be readily and without cost transformed into a different type of machine which is more profitable in the light of changing technical knowledge and changing relative scarcities of the factors of production" [5, p. 45]. Evidently this "steel" is like land in that it can be used for various kinds of production, in various proportions with labor, and in newly invented

superior techniques, without losing its physical identity. On the other hand it is more like steel in the literal sense in that it enters into the production of itself. We are not told what its unit—a ton—is intended to represent. It is not a unit of productive capacity, nor of employment offered, nor of cost. One cannot help suspecting that the author would rather like us to have in mind the associations of “a ton of steel” in its everyday sense while salving his conscience by having written down assumptions that show that he is talking about something quite different. He foxes us still more by always referring to the stock of steel in existence as “machines.”² For present purposes let us write it *leets*, so as to be continuously reminded that we do not know what it means.

There are two production functions, at each moment of time, in terms of labor and leets as inputs, one with shirts and the other with leets as outputs.³ These are not merely *ex ante* microproduction functions governing the choice of technique for new investment. They relate the use of physical stocks of factors of production, already in existence, to current rates of output in physical terms. (In the terminology used above, a higher over-all leets/labor ratio would correspond to a higher degree of mechanization having been chosen for the whole stock of means of production in existence.)

No working capital is required, and it appears from the description quoted above that the division of leets and labor between the two industries, and the proportions of leets to labor in each, can be instantaneously adjusted, without cost, to any change.

Because of its versatility, leets cannot suffer from obsolescence and, though it suffers from physical decay it does so by evaporation at a rate that is independent of its age.⁴ The owners of leets employ workers, paying wages and receiving quasirents. The money price of shirts is constant, and the money wage is such that all labor is employed.

By considering these assumptions (rather than from the author's explanations) it can be seen that, given the technical conditions exhibited in the production functions, the quantity of leets in existence and the propensity to save of workers and leets owners determine the whole system.

Equilibrium requires that the ratio of leets to labor in the shirt industry is such that the marginal product of additional labor employed with a given quantity of leets is equal to the wage (product and wage both being a quantity of shirts) for, without working capital, the marginal cost of a man-year of labor is simply the wage per man year. In the leets industry, the ratio of the additional product of an additional quantity of leets employed with a given amount of labor, to that quantity of leets, is equal to the current rate of profit on capital. Equilibrium also requires that the ratio of the output of shirts to the shirt value of total output corresponds to the ratio of consump-

² Chapter 6 purports to introduce a variety of types of equipment specific to particular outputs and particular techniques, but no attempt is made to explain what a quantity of “machines” or their marginal product is then intended to mean.

³ For most of the main text the two production functions are identical.

⁴ This assumption is removed and a special chapter devoted to depreciation, but it does not seem to be very well integrated with the rest of the analysis. The numerical examples do not hang together for, though the argument is based on the Kahn-Champernowne formula for value of capital, it has not been used in working them out.

tion to income. Thus the shape of the two production functions, the thriftiness conditions, and the stock of leets in existence determine the equilibrium values of the shirt wage, the shirt price of leets and the rate of output of each commodity at any point. The rate of output of leets governs the growth of the economy from that point on.

In the terminology used above, an iso-elastic rise in the shirt production function (with no change in the leets sector) corresponds to neutral technical progress. It raises output per head while leaving unchanged the labor and leets required to equip a man for a technique of a given degree of mechanization. A rise in the leets production function, with the shirt production function unchanged, is capital-saving or capital-using, according as the elasticity of substitution between leets and labor in the shirt sector is less or greater than unity.

The thriftiness conditions, and the form of the production functions and their rate of rise, define a ceiling and a pursuit path. The amount of leets in existence defines the point on the pursuit path that the economy is at and the pace at which it is moving along it.

Instead of setting out a number of such paths, as we have done above, and following each one through, Meade proceeds by taking, so to speak, a spot check here and there, showing what the relations must be between the rate of growth of the stock of leets and the changes in the shirt price of leets and the shirt wage that are going on, on paths characterized by different shapes of the production functions or different thriftiness conditions. (He also brings a changing labor force and land as a factor of production into the analysis.) This does not make for clarity. We are always in the course of moving without being told where we start from. In particular, the determination of the division of the labor force and of the stock of leets between the two sectors, at the point where a spot check is being taken, though entailed by the marginal productivity conditions, is not set out in a perspicuous manner. Also, there is a current rate of profit on capital somewhere boiled into the mixture but not strained out of it. Some of the obiter dicta, such as that technical progress in the leets sector has a tendency to raise the rate of profit on capital, are distinctly queer; but most of the time the rate of profit on capital drops out of sight altogether and the argument is conducted in terms of the shirt-value of profit per ton of leets.

The author does not seem to find any particular significance in the relations that he discovers, except for one case which he regards as specially important, and for which he sets out the characteristics of the path in a coherent manner. It is the case in which technical progress is combined with a constant division of the labor force between the two sectors.

He specifies it as follows. The production functions, both rising through time, each show a unit elasticity of substitution between leets and labor. The share of wages in the value of output in each sector separately therefore remains constant as the leets/labor ratio alters. There is a constant proportion of saving out of wages and out of profits. These two conditions combined ensure that there is a constant proportion of output of shirts to the shirt value of the output of leets. The proportionate division of labor and leets between the two sectors remains constant as the stock of leets grows. The shirt wage

rate and the shirt value of profit per ton of leets rise in the same proportion as total output.

The reason why this case has particularly taken Meade's fancy is evidently because it shows a steady rate of growth together with a movement along the production functions (as the over-all leets/labor ratio rises) which gives a prominent role for the marginal physical products to play. The composition of output remains constant as the total increases, so that physical product has an unambiguous meaning, and it is possible to say that the marginal physical product of labor is rising in proportion to output, when the marginal product means the addition to total output that would be produced by an additional unit of labor with the same total quantity of—yes, but of what?

He seems to be an ill advocate of the cause that he has at heart. If there is no sense to be made of the idea of a production function unless "capital" can be presented as a homogeneous physical substance, with some of the properties of land and some of the properties of ectoplasm, then indeed there is no sense to be made of it. But this is certainly not the case. Postulate full employment in continuous competitive equilibrium and the assumptions we choose to make about technical and thriftiness conditions will see us through, right on till Kingdom Come, without any need to resort to ectoplasm. What they cannot do is to tell us anything about the history of the world we live in.

There is another feature of Meade's special assumptions which is interesting for the light that it throws upon the nature of equilibrium analysis. He claims that he does not need to start his model off at any moment already on its appropriate pursuit curve. It can start anywhere, with any arbitrarily given stock of leets, and will find its way onto the path. There is one exception. When leets per man is much greater in the leets sector than in the shirt sector, and neither of the production functions is very elastic, a fall in the output of leets, requiring a transfer of factors to the shirt sector, makes leets redundant and its price falls to zero. Presumably if this had been foreseen it would not have been allowed to happen. In this case, therefore, if the story begins in a position where the rate of investment is higher than is appropriate to the equilibrium path, the economy cannot get onto the path without falling out of equilibrium. To guard against this case Meade assumes that the production functions are sufficiently elastic to be able to accommodate any over-all leets/labor ratio to any division of factors between the sectors that equilibrium may require. Subject to this proviso, he can show that whatever amount of leets there may happen to be in existence, it will be sorted out so as to satisfy the conditions of equilibrium and set the model moving along the path appropriate to its assumptions.

The reason why he can do so is that he has eliminated all effects of past history upon what happens "today." The age composition of the stock of leets does not affect its future productivity or its value; no fossils from past out-of-equilibrium investment can affect the future course of investment.⁵ The versatility of leets means that investors have no need to worry about its future usefulness—if the rate of investment falls off in the future they will switch leets from the leets sector to the shirt sector. It is true that such movements

⁵In Chapter 6 some of these problems are referred to but not resolved.

will be accompanied by changes in the shirt value of the stock of leets, but it appears from the way that the thriftiness conditions are laid down that investors take no account of capital gains or losses. No one, it seems, either has or needs any foresight. All that is required is to shift factors about from day to day (which can be done without cost) so that the marginal product of labor in shirts per man is equated to the shirt cost of employing a man (since there is no working capital, this is equal to the shirt wage) and the value of the marginal net product of leets is equal in the two sectors.

It seems rather strange to describe this system, in which the concept of capital is totally divorced from time, as neoclassical. The neoclassics, Böhm-Bawerk, Marshall and Wicksell, were all intensely preoccupied by the role of time in the process of accumulation and sought in it to find a clue to the meaning and measurement of capital as a factor of production.

However that may be, Meade's peculiar assumptions, by the trouble which they take to emasculate history, show very clearly what is the nature of the assumption of equilibrium and the manner in which it insulates the analysis from contact with reality.

REFERENCES

1. J. S. DUESENBERY, *Business Cycles and Economic Growth*. New York 1958.
2. R. F. KAHN, "Exercises in the Analysis of Growth," *Oxford Econ. Papers*, June 1959, *11*, 143-56.
3. N. KALDOR, "Alternative Theories of Distribution," *Rev. Econ. Stud.*, 1955-56, *23* (2), 83-100. Reprinted in Kaldor, *Essays on Value and Distribution*, London and Glencoe, Ill., 1960, pp. 209-36.
4. ———, "A Model of Economic Growth," *Econ. Jour.*, Dec. 1957, *67*, 591-624. Reprinted in Kaldor, *Essays on Economic Stability and Growth*, London and Glencoe, Ill., 1960, pp. 209-36.
5. J. E. MEADE, *A Neo-Classical Model of Equilibrium Growth*. London 1961.

COMMUNICATIONS

Research, Invention, Development and Innovation

In what follows, an attempt is made to integrate the theory of innovation more closely into economic theory by treating it as a problem in the theory of the firm. While microeconomics is not on a completely solid footing, it is relatively so, and some problems in current discussions of innovation can readily be made somewhat more precise when they are formulated in the way outlined here.

Although science and business are distinct, the operations of businesses produce data of scientific interest, and businessmen are willing to pay scientists to answer certain kinds of questions. On the other hand, scientists working on their own initiative discover things which business can profitably use. Thus, both for the economy and for science, there exist autonomous changes (a change in one not caused by a change in the other) and induced changes (a change in one caused by an autonomous change in the other). It requires care in formulation to avoid imprecision in thinking.

Research, as used in this paper, will refer only to a flow of new statements about the natural world. *Invention*, as used in this paper, consists of a flow of prototypes of articles which have never been made before, or processes which have never been used before. *Development*, as used in this paper, means a flow of instructions (blueprints, diagrams, etc.) which enable the construction and equipment industries to build fixed plant of kinds never used before; and also enable the personnel of these plants to operate them when finished. It may also make it possible to use existing fixed plant to make articles unlike those they had hitherto made.¹

These terms so far are void of economic content, since the new articles and processes do not enter the economy until they have a price, and until at least one transaction involving them takes place. At the moment the new price appears and the new kind of transaction is carried out, an *innovation* has taken place. This last term is the relevant one for economists, and it is useful to look briefly at its position in economic theory generally, for this paper aims in part at increasing its theoretical usefulness.² We begin with an overly condensed statement of Schumpeter's analysis.

In an economy in equilibrium without growth, savings or investment, with fixed quantities of productive resources and the state of the arts given and un-

¹ The word *never* must be interpreted in a somewhat limited sense. Some research and invention are forgotten and must be performed again. "Negative feedback," for instance, was rediscovered a century after it appeared as a curiosity in physics books and formed the basis of much "new" advance in electronics after 1920. The root *rawulfia serpentina* was used noncommercially by Indian peasants for centuries before the pharmaceutical industry discovered tranquilizers.

² The terminology used here is relatively simple. No distinction is made between "more basic" and "less basic" research, for instance. The reader who can cope with more than three economic variables at a time is invited to expand the list by referring to the papers at the Conference cited in the concluding footnote, and particularly to Jacob Schmookler's discussion of Simon Kuznets' paper.

changed, adjustment takes only the form of demand shifts among industries, and of corresponding shifting of capital and labor in response. In such an economy, there is no growth and no business cycle, because saving or investment in one industry is exactly offset by dissaving or disinvestment elsewhere without loss of capital. Innovation occurs because entrepreneurs have a new commodity to sell consumers or a new type of productive input.³ In one sense, innovation changes the general equilibrium model from one with n different prices and quantities of goods sold to another having $n + 1$ prices and quantities.⁴

The innovator must obtain funds by borrowing newly created money (there being at the instant of innovation no savings in the economy). This creation of money in turn sets into motion price changes (since the innovator bids resources away from consumers), savings (since the additional money ends up in the hands of people willing to hold it), profits (both on the innovation and on other goods) and investment (on the innovation itself, and perhaps in other industries).

The foregoing statement, like Schumpeter's, assumes that innovation occurs at a single instant. At time t , there is an n -commodity economy, at time $t + dt$ an $(n + 1)$ -commodity economy. The change occurs at the moment when (1) the entrepreneur obtains purchasing power (money) (2) to bid productive resources needed away from the managers of other firms (3) and puts on the market new-type goods.⁵

Those who discuss innovation are apt to talk about it as if it involved only that one aspect of immediate interest to the writer of a paper. As a result "innovation" has come to mean all things to all men, and the careful student should perhaps avoid it wherever possible, using instead some other term.

We shall try to set forth concisely the economic relations among research, invention, development and innovation, and particularly to point out which elements are conceivably observable (or even measurable); which are capable of analysis in somewhat conventional economic terms; and which are probably doomed to remain "intangibles." In addition, we are concerned with deciding how the various quantities we might observe relate to Schumpeter's concept.

I. Information-Producing Firms

An innovation is a set of actions of an entrepreneur upon the economy, but would-be entrepreneurs need information as to how best to proceed. Information is scarce and useful, and it therefore has a price.⁶ Suppliers of informa-

³ Schumpeter also lists as types of innovation the following: change in marketing methods, in law, and in methods of business organizations. We are not concerned with these in this paper.

⁴ In this sense, as Schumpeter pointed out, *Theory of Economic Development* (Cambridge, 1934), p. 64 note, innovation is essentially a discontinuous process, in contrast to general equilibrium, in which changes can be broken down into arbitrarily small steps. "Add as many mail coaches as you will, you will not get a railroad thereby."

⁵ Alternatively, old-type goods produced with a new-type input.

⁶ Some information, of course, is "free," its production being subsidized by government or endowed nonprofit organizations. But these have only limited output. A firm wishing more must pay for it.

tion exist either as independent businesses in the market place, or as subsidiaries of businesses one of whose "products" is information. We shall treat these suppliers as firms having a production function, which (like the conventional production function) is concerned with the transformation of inputs into output. Note that "firm" in what follows signifies any information-producing unit, no matter whether its counterpart in the real world is a research department or a laboratory, consulting engineer, or any other kind of affiliated, employed or independent person or group of persons engaged in the production of (chiefly technological) information.

"Information" is not homogeneous. In one breakdown, it is convenient to think of "the information industry" as an ordered sequence of markets, in which there is movement from "raw" to "semifabricated" to "manufactured" information, comparable to the sequence from ore to metals to metal goods. On the other hand, we shall point to a second flow of information running in the opposite direction to this main flow. This, for the moment, we shall term "feedback." Table 1 schematizes these flows, and part II of this paper will consider them as a sequence of markets. Here we consider a firm located at an arbitrary point in this sequence.

A. For all firms in this industry information is both an input and an output. It also appears in the form of results which are generally accessible, of an inventory of the firm's experience, and of special data which are provided as part of contracts, for processing, as it were. The firm is employed to solve a problem given some data, and the solution is an output. A solution, too, is information, but it is more highly fabricated information than the original input. The ultimate purchaser of information is the entrepreneur, and "degree of fabrication" is closely related to "closeness to innovation."

B. By-products are generated at the same time as solutions. These by-products are also information, but they differ from solutions in that they are no more highly fabricated than original inputs of information. They will be called "feedback," since they may be usable as inputs for firms which produce less fabricated information.

For example: A firm engaged in designing airplanes may find that a wing it has designed actually works better than it "should" on the basis of existing information on air flows. In this case, the wing design is the output of the firm, and is salable to an airplane manufacturer.¹ On the other hand, the performance characteristics of the wing are feedback and may enter the production function for other wing designs, or even the production function for new mathematical theorems. The distinction between (intended) output and by-product usable as feedback is made, because we are interested in the flow of information into the production processes of firms producing material goods and services (rather than information).

C. All production functions use labor, capital, materials, etc. The mixture of kinds of labor used will vary at different stages of processing information.

¹ In practice, the designing firm may be wholly owned by the manufacturer. We disregard this complication on the grounds that if an independent firm had a superior design, it would have a salable product.

TABLE 1—THE DEGREES OF FABRICATION IN THE PRODUCTION OF INFORMATION,
AND OF THE FEEDBACK OF INFORMATION

Stage	Illustrative Inputs		Illustrative Outputs	
	Feedbacks Inputs From	Other Inputs	Feedback Output	Other Output
Basic Research	Orders from Entrepreneurs Basic Research Inventive Work Development Work "Bugs" ^a	Scientists Laboratories Nonscientific Labor Materials, Power, Fuel	New Scientific Problems Laboratory Results	Hypotheses and Theories Research Papers— "Formulas"
Inventive Work	Orders from Entrepreneurs Inventive Work Development work "Bugs"	Output of Basic Research Scientists Engineers Laboratories Nonscientific Labor Materials, Power, Fuel	New Scientific Problems Laboratory Results Unexplainable Successes and Failures	Patents Nonpatentable Inventions (memoranda, work- ing models, sketches)
Development Work	Orders from Entrepreneurs Development "Bugs"	Inventive Output Engineers Draftsmen Other Labor	New Scientific Problems Need for Inventions Unexplainable suc- cesses and Failures	Blueprints Specifications Samples Pilot Plants
New-Type Plant Construc- tion	Orders From Entrepreneurs "Bugs"	Development Output Resources of an Ordinary Con- struction Firm	"Bugs"	New-Type Factory

^a Bugs, or persistent, irritating obstacles to the completion of units of information contracted for, may have unexpected but important consequences. The observation that pitch-blende spoiled photographic plates led one scientist to keep the two apart (a "bug") and another to discover radioactivity. The point is important enough to mention here, but too diffuse to treat in detail.

Thus a firm which produces information about the properties of gases may employ many physicists, but also a few engineers to design laboratory equipment. The firm which produces designs for airplane wings will employ many engineers, but also a few physicists to interpret the results of basic research. All firms may employ stenographers, janitors, public relations men, personnel managers, etc.

Since the firms we are talking about all have problems as inputs, and information as output, and since problem-solving is ultimately the use of reason and intuition, it is likely that labor of any formal designation (e.g., physicist, engineer) can be used in more than one stage of information production.

Where substitution is possible, vertical integration will be more common.⁸

"Capital" means here buildings and equipment. These, of course, are designed in conformity with the output of the firm. Thus the equipment of a firm producing research findings is called laboratory equipment and is different from that of a firm producing material goods, which is called factory equipment. Particular capital goods may, but probably will not, be used at more than one stage of information production.

D. The production function of an information-producing firm is an estimate, by the management, of how many problems can be solved per unit of time with various combinations of inputs. To the extent that problems are not homogeneous, a complication is introduced which is discussed in part III below. In the usual way, given a production function, management can obtain a cost function which will enable it to bid on research or development jobs. Production and cost functions, of course, must take into account elements of risk. The solution to a problem may turn out to be more difficult than anticipated. This aspect of estimating costs has a counterpart in the construction industry, which is notoriously subject to unanticipated obstacles. An information-producing firm, then, will have as a part of its long-run costs an allowance for the cost of borrowing funds to tide it over a succession of problems which may turn out to be more difficult than anticipated.

II. *Degrees of Fabrication*

The markets for information are in fact complicated by varying degrees of vertical integration. While some firms have a production function encompassing only one stage of those we shall discuss, others encompass two or more stages. Some terminological problems in the literature reflect merely the difficulty inherent in discussing any set of markets in which each firm may participate in a special subset, so that no two firms compete in the same subset of markets even if every pair of firms competes in at least one market. This problem is not easy, but it occurs in many economic problems besides this one.

An innovation (here a technological change) ordinarily requires investment in plant and equipment. If existing plant and equipment may be used to produce a new commodity, only conversion costs are needed. The innovation in any case will require development—a set of technical instructions to production personnel and to construction personnel.

In this simplest case, a would-be entrepreneur goes to a firm which does development work (say a firm of consulting engineers) and orders a set of speci-

⁸The term "commodity" may be applied to the goods produced by one single-product firm when these goods have infinite elasticity of substitution. Two single-product firms are in the same industry if the elasticity of substitution for their products is very large. A group of such firms form an industry if the elasticity of substitution between each pair of products is very large, while the elasticity of substitution between the product of any firm in the group and that of any firm not in the group is substantially less. Reasoning along similar lines, we could say that physicists have relatively high marginal productivity solving some set of problems; but there is a significant gap between their marginal productivity on this set and their marginal productivity on other problems. Of course, if a group of people can be found with high marginal productivity on *some* (but not all) problems of two professions, then a firm could use these people on problems which overlapped the two.

fications which will enable him to order the production of the new good, or the new process. The order is an input of the development firm. This firm may have a stock of experience from earlier work (one form of feedback) which will enable it to fill the order.

If the order involves something which has never been done before, an invention may be necessary. The invention may be patentable; it may be a technical paper (which may in turn be publishable). In the schema we have outlined, in which there is no vertical integration, the development firm goes to an inventing firm, and orders a paper (sketch, model) of something which could do the job that must be done.

The inventor shows that there is a way of doing something. The developer, in contrast, issues instructions to builders or manufacturers in such a way the latter can actually make the object needed in quantities large enough to meet the orders of a market.

Inventing thus is (in logic) needed only if nothing of this sort has ever been invented,⁹ or if patents restrict the use of known methods. The information that an invention is needed takes the form of statements: "We cannot do X by methods $Y_1, Y_2, \dots Y_n$ because of defects $D_1 \dots D_m$ in these methods." This sort of statement is a feedback of development work into the inputs of inventing firms.

Invention involves the application of resources to finding new ways of doing things. Development involves issuing instructions as to how a given way of doing things may be applied to an entrepreneur's business. But the entrepreneur may wish to do something which requires an "impossible invention." Some such inventions cannot be made because inventors have not been lucky enough to hit upon the right approach. Some may be impossible because, say, they would require the use of perpetual-motion machines. But there are intermediate categories of uninvented things and in these research plays a part. The inventor, in our schema, asks whether there exists a way by which X can be invented. Basic research provides information as to whether ways exist to invent things. The information that inventors have been unable to invent X by any of several ways is a feedback output of inventors and an input of basic research. The output of research consists of statements which tell inventors of possible ways of inventing, and thus are one of inventors' inputs. The patents, papers, models and sketches which are inventive output are an input of development work. The blueprints and specifications which represent development output are inputs of the builders. The entrepreneur, who sets the process in motion, may only have contact with the builder. The production of information may be involved in an innovation, but conceptually it is simplest to regard the various stages as distinct, with each information-producer or user purchasing less fabricated information only to the extent that he needs it in his own production process.

Feedback, we say, is a movement of information in the direction opposite

⁹ We are disregarding salesmanship and "inventories." A firm whose business it is to invent may seek out would-be entrepreneurs and sell them their inventions (including patent rights). Likewise, it may have a stock of patents which it will sell or license to anyone willing to pay enough.

to this fabrication process. Builders of new-type plant may encounter bugs which must be resolved by development firms, or even by inventors or researchers. Developing may bring a need for a new invention, and even for research to make possible an invention. At each stage, the design or laboratory work may provide empirical data which help either to create or to resolve problems for the maker of less fabricated forms of information. Such feedback may in fact be published in trade and professional journals, and if it is, it is available to the entire industry.

Any information-producing firm will have an inventory of problems, of feedback, and of results. Some of this information may be perishable (e.g., if a competitor gets in first with a patent), and even if it is not, it is not marketable unless processed. On the other hand, groups of problems may involve joint costs, so that it is cheaper to solve them jointly. In this sense, the establishment of priorities in information production involves the problem of planning production runs and inventory, which is dealt with elsewhere in economic literature.

There is a widely held belief that an inventory of problems at any one stage can be processed more cheaply using some output from a less fabricated stage. Thus one basic-research result can make possible a group of inventions; one invention can make possible a group of development projects. If so, it might be convenient to think of would-be entrepreneurs generating orders for new plants; only a certain proportion p_1 of these would require new inventions; and if a part p_2 of all inventions requires research, then an input-output coefficient would require $p_1 p_2$ units of research per unit of new plant. These numbers, p_1 and p_2 , may not be constants, but depend upon the particular type of innovation. Their reciprocals, however, do not measure the amount of more fabricated information resulting from a unit of less fabricated information, since there is a tendency for "more basic" (less fabricated) information to be relevant to more potential innovations than that which originally financed its production. In this sense, one innovation can induce another through its effect on research output. We might imagine measuring the importance of basic research or inventions in terms of the number of innovations resulting from it. Groups of information are complementary, in that their members depend upon the volume of input of less fabricated research.¹⁰

Internal and external economies of scale thus have different roles at different stages of information production. Development can apparently be carried out efficiently by large, relatively anonymous engineering departments of firms, while research can be efficiently carried out mainly by relatively small firms (when these share overhead costs, there may be economies here too, as the existence of universities shows). Thus there may be internal economies of scale in some phases of information production.

Likewise, there may be external economies. Much of what is here called feedback provides a free input for other firms. When research results are pub-

¹⁰ Such orderings are difficult when innovations depend on several inventions (or research results). Each invention is necessary, but none is sufficient. Thus an invention with one and only one application may make possible an innovation requiring in addition many other inventions.

lished or patents made available for license, results already known to one firm become available to others. Likewise, an increase in the amount of invention may provide an increased amount of imperfectly understood data which re-enter the process as problems for research, or even (for practical purposes) as laboratory data.

If there were purely competitive conditions among research, invention, and development firms, the price of an invention to a development firm would equal the marginal cost of the invention to the inventing firm; the price of a new scientific principle to an inventing firm would equal the marginal cost of discovering it, and so on. The cost of the marginal developed plans bought by entrepreneurs from a development firm would then equal the return entrepreneurs expected from their utilization as innovations. In the monopoly case, we substitute "marginal revenue" for price, in the usual fashion.

III. *Measurable Parts of Innovation and Information Production*

If a concept must stand for a directly observable phenomenon, the concept of innovation is probably not an operational one. In order to observe innovation, it would be necessary to isolate those funds available to finance innovation from total investible funds, and this, while in theory possible, is not practical. It might be possible to determine the moments at which new types of goods (or new processes) appear in the market. However, census techniques do not isolate industrial subclasses below a certain minimal size. While this size could be reduced, it is unlikely that it can be cut so finely as to separate the innovator from the imitators who follow him.

It is tempting, then, to try to associate innovation (at least in the sense of technological change) with the production of information. If there were a stable relationship between this production and innovation, or if there were a relationship varying within something like sampling limits, then a measure of information production would approximate a measure of innovation itself.

It has been felt generally that there is no direct way of measuring the amount of research, invention or development, since these quantities are intangible. Statistics on the number of research papers and patent applications are a case in point. Some papers and some applications are obviously more important than others, however, we may define importance. Suppose that it could be shown that the relative numbers of research papers (patents) on particular areas vary in the same way over successive intervals in time as would successive random samples from some given population. We would then be able to say that in fact successive groups of research papers (patents) varied in importance with their numbers, since there was a constant probability that a paper (patent) selected at random would be of a given importance. This statement could be true even if no measure of the importance of a single paper existed.¹¹ Provided that it can be established either that the content of research in one period is statistically independent of, or demonstrably correlated to, research in successive periods, and provided it can be estab-

¹¹ I have made some study of the statistical questions involved in an unfinished study of which this is a part. I am prepared to say at this time that this proposition does not seem absurd with regard to electronics research.

lished that within any period research takes place as a statistical process, then it should be possible to derive quantitative measures of research. This statistical process asserts the existence of a certain kind of complementarity among various kinds of research output within an interval of time and also between intervals.

If development consisted solely of blueprints, the input of blueprint paper might be an index of such output—although here, variations in the value of n in the n -tuplication of copies might overshadow variations in the number of originals. If there were in fact a fixed proportion in the process (e.g., if final drafts were prepared by draftsmen of constant output per hour), some other input might possibly be used as a measure of output. We shall explain why we are doubtful of this latter approach.

Changes in the numbers and specifications of types of equipment and components available in industrial catalogs can provide numbers of changes in these over time. Such data would not distinguish between "important" and "unimportant" changes in the numbers of equipment and component types, but here too a more detailed statistical study might place bounds on the importance of such inaccuracies in discussions of aggregates. If so, the difficulty about "importance" is misleading. The importance of a piece of research, of a patent or of a design varies with the date of the observation.¹² It is unlikely that the estimate of importance can be dissociated from the date at which it was made. Like a price weight, but more so, it may be subject to fluctuations over time which would introduce a technical bias into any index.

In the absence of any generally accepted indexes of output, studies frequently make use of value figures, since the sales (and for nonprofit institutions, the costs) of research, invention, and development are relatively accessible. These are subject to the ordinary difficulties resulting from changes in the general price level. In addition, however, there is no reason to suppose that the price of research output has varied in strict proportion to other prices. Since there appear to be important elements of monopoly in some sectors of information production, it might be conjectured that in these sectors at least (as in other monopolistic sectors of the economy) prices will be less flexible than in competitive sectors, so that deflation of sales by the general price index would be inappropriate. Moreover, important sectors of information-production are wholly-owned subsidiaries of other firms and report costs but not revenues. If these subsidiaries are like the familiar monopolies (albeit bilateral) of textbooks, they will be producing under conditions of declining average cost. Changes in total expenditures on information production will thus depend upon the elasticities of cost curves as well as upon the general price level, and the price policies of the firms.

In some cases, estimates of output of information are based on a labor theory of value, and use man-years as measure of output. Some businesses use this as a measure for internal purposes. Elementary economics will show that with given techniques of production and hence declining marginal productivity

¹² Thus the invention of processes for making high-octane aviation gasoline seems much less important now than a few years ago, since jet planes can use kerosene, and rockets use neither.

of labor, such an approach would overestimate increases (underestimate decreases) in output. However, production techniques do change. Increased use of technicians relative to professional personnel and use of equipment such as digital computers have certainly altered information production functions. An increase in one input will necessarily increase the average productivity of other inputs,¹³ but may either increase or decrease their marginal productivities. In actual calculations, then, the assumption that output of information is proportional to physical-labor inputs would certainly not be approved in any other situation, and it is hard to approve it here. The direct output data already mentioned may be subject only to statistical variation, while labor input data, by their very nature, are subject to systematic error, even the direction of which is not ascertainable in the absence of directly measured output.

IV. *Rents and Profits*

Innovation is undertaken in a capitalist economy in order to make profits. Production of information may also be a profitable industry. It is useful to distinguish between the two. It is quite possible for a firm of consultants to make a normal profit selling information to entrepreneurs making much higher profits. There is then a natural division of labor, one specializing in information, the other in raising funds and building plants. Some information-producers may have "natural advantages" and make above-normal profits, just as some entrepreneurs may fail.

It does appear, however, that research tends to take place in nonprofit-making institutions, that invention and development tend to take place in subsidiaries (or branches) of firms which produce goods and other services, and that construction (and equipment) of new-type plants is not to be distinguished from other construction (and equipment) industry. If the frequency with which a particular type of information is needed by entrepreneurs declines the more basic the type of information, the persistent availability of funds for research only occasionally needed by any one industry suggests a high cost of entry or exit, which in effect makes some joint subsidy of basic research by otherwise competing firms desirable.

Inventive and development work has tended to be concentrated in vertically integrated relationships. This circumstance is curious, as there is no reason a priori why firms should not invent or develop on order. A part of the explanation, in the absence of a patent system (or in the case of nonpatentable inventions) might lie in incentives for secrecy. Businesses, however, do hire outside lawyers and accountants to handle problems where secrecy is essential. Given patent protection, and the possibility of protective contracts, the existing situation is even stranger.

A possible explanation may run in terms of feedback and economies of scale. If feedback is useful to information producers, they should be willing to pay

¹³ If professional personnel produced only ideas, and these appeared at a constant rate per person over time, regardless of what else the person did, this might not be true. Research administrators seem to feel, however, that the flow of ideas is increased if professional labor is freed from drudgery, a view to which the research grants from which I have benefited are witness.

for it. If, however, feedback from firm A is not useful in providing information to firm B, then there may be no economies of scale in expanding the firm to a size where it can handle the orders of both A and B.

If the production of information were purely competitive, profits arising from information production would be due solely to the work of firms having production costs less than those of the marginal firm. If, however, this production were monopolistic, then producers of information might insist on a share of the entrepreneur's profit. The possibility of sale or assigning of patent rights formalizes one arrangement of this sort. But the treatment of unpatentable inventions and development work is fundamentally of the same sort. If then most entrepreneurs are in existing business firms, while inventive and development work is monopolistic in nature (difficulty of entry being an easy explanation) it is not surprising that vertical integration should occur as a form of profit sharing.

V. Innovation Revisited

In Schumpeter's analysis, innovation is associated with entrepreneurs, who in his sociological and philosophical scheme are the agents of progress, the bold few who break the stagnant circular flow in which natural forces and the lethargy of the rest of society hold the economy. While his vision is little understood, it is generally felt to be important, and it is worth considering how the foregoing discussion affects it.

We have noted that innovation has several facets: (1) the acquisition of purchasing power by entrepreneurs through credit expansion; (2) the hiring of services away from existing firms; (3) the production of new-type goods, including new-type equipment; and consequently (4) the shift from an n - to an $(n + 1)$ -commodity economy.

If entrepreneurs were in fact a group distinct from ordinary managers of firms, innovation would be as Schumpeter envisaged it. But while his hypothesis is sufficient for his purpose it does not appear necessary. Suppose, in fact, that managers would all like (even in a circular flow economy) to become entrepreneurs. They could then invest their depreciation funds in information, rather than simply in replacing equipment with identical new equipment. If information purchased provides the basis for innovation with sufficient expectations for gain, such investment would provide (within limits of statistical sampling variation) a steady flow of innovations even if there were no credit expansion; managers who became entrepreneurs might not even bid resources away from other firms. The economy would experience changes in the number of goods it produced. These changes would be discontinuous, since the number of goods produced is necessarily an integer, and they would involve inflationary financing if investment in the innovation exceeded disinvestment in existing commodities.

To maintain such a view, it is necessary to assert that there are "little" innovations as well as "big" ones; that a manager has the option of becoming an entrepreneur; that the probability of his becoming one depends upon his willingness to purchase information. Thus a continuous flow of information

(in the form of basic research, inventions and development) can produce a series of discontinuous changes in the economy (measured in terms of the number of commodities existing in the general equilibrium system). This view, like most reinterpretations, is a lackluster version of the original and substitutes a horde of pygmy entrepreneurs for Schumpeter's handful of giants. This is perhaps necessary if the ordinary economist is to cope with the vision of a great one.

EDWARD AMES*

*The author is professor of economics at Purdue University. This paper owes a great deal to Fritz Machlup. It is a by-product of a year I spent with his workshop on the economics of innovation at The Johns Hopkins University. The table, in particular, is based on a table in Chapter V of his forthcoming book, *The Production and Distribution of Knowledge in the United States* (Fordham University Press, 1961). It originally served as the basis for a workshop discussion of the papers given at the May 1960 Conference on the Economic and Social Factors Determining the Rate and Direction of Inventive Activity held at the University of Minnesota. (The Proceedings of the conference are, I understand, to be published by the Universities' Committee of the National Bureau of Economic Research.)

Foreign Exchange Guarantees and the Dollar

Many economists have taken the persistent deficit in the United States balance of payments since 1949 as an opportunity for diagnosis and prescription. In addition to a host of "basic" measures designed to correct the deficit, several in recent months, stimulated in part by the large gold outflow, have stressed the importance of taking special measures to maintain confidence in the dollar. It has been argued that if speculation on the dollar price of gold can be curbed, then our gold reserves will be more secure. More specifically, the argument is that if fears of devaluation can be removed, one important demand for foreign currencies will be curbed and we will as a consequence be under less pressure to follow restrictive foreign trade policies.

A favorite recommendation to prevent speculation against the dollar has been that foreign dollar holders be given a "gold or exchange guarantee."¹ These proposals, however, have been noteworthy for their failure to define precisely what it is meant to guarantee or to trace out the implications of the schemes. The proponents also suggest that a guarantee is a simple device with obvious consequences. This note sketches some of the forms a guarantee might take, and what some of the consequences might be.

Speculation against the dollar may take place not only because holders of dollar assets fear the United States might change the gold price, but also because they anticipate other currencies may be appreciated (at the initiative of foreign authorities) vis-à-vis the dollar. For the United States to guarantee against a change in the value of the dollar, in terms of foreign currencies, by

¹ See, for example, Gottfried Haberler, "The State and Prospects of the U. S. Economy," *Lloyds Bank Rev.*, Jan. 1961, pp. 33-34; Donald MacDougall, "The Dollar Problem: A Reappraisal," *Essays in International Finance*, Princeton University, Nov. 1960, p. 72; Alvin Hansen, *New York Times* (Letter to the Editor), Dec. 21, 1960; and *Rev. Econ. Stat.*, Aug. 1960, 42, 255-56; Richard Gardner, "Strategy for the Dollar," *Foreign Affairs*, Apr. 1960, p. 442.

agreeing to write up the face value of the guaranteed dollar holdings of those countries who have taken the initiative in appreciating their currencies would mean that the United States was surrendering to foreign authorities the right to determine the face value of their dollar holdings coming under this agreement. Under this form of guarantee it is conceivable that a nation might even be tempted to appreciate its currency in order immediately and directly to acquire more dollar holdings with which to finance a desired import surplus. The case against such a guarantee seems overwhelming, and, so far as we know, it has not been proposed. But a system of exchange guarantees without this coverage may turn out to be of only limited help in curbing speculative runs on the dollar.

Some have implied that the guarantee would take the form of an obligation by the United States to provide a specified quantity of gold for each dollar held by designated foreigners. In effect, this is what we are now doing. If foreigners fear that we cannot maintain the current gold conversion policy it is difficult to see how the mere provision of a more formal commitment would change their expectations. A guarantee is worthless unless it is credible and to guarantee holders of dollars the right to buy a physical quantity of gold might become demonstrably beyond the capacity of the United States.

However, one gathers that what is most often meant is that foreign (official) holders of short-term dollar assets would receive from the United States government a guarantee that, in the event of devaluation of the dollar by action of the United States, the face value of such dollar assets would be increased in proportion to the devaluation.²

It has apparently been generally assumed that under this policy the United States would continue the present policy of standing ready to purchase and sell gold in any quantity offered at the present dollar price. But this would carry with it some important costs. If the exchange guarantee is credible, then dollars are worth more than gold to the foreigners because they are an earning asset and because there are no storage or insurance costs, while dollar holdings will provide as good protection against devaluation as gold. As a result, there might again be a golden avalanche on New York. Our foreign short-term liabilities thereby will be increased. If there should then be balance-of-payments developments such that the supply of dollars exceeds the demand for dollars for purchases from the United States and for increases in foreign balances, then the exchange rate will be put under pressure. But our gold accumulations will now be of little help in supporting the exchange value of the dollar vis-à-vis other currencies. So long as we maintain a credible guarantee, dollars, as noted above, are superior to gold and therefore others presumably will be reluctant to sell us either dollars or their own currencies for gold at the fixed U.S. price. Thus, the effect of the guarantee policy would be to increase our short-term liabilities and to reduce the usefulness of our gold re-

² A colleague has suggested to us that perhaps the proponents of exchange guarantees mean to advocate no more than short-term agreements between a few central banks to support each others' currencies, with mutual guarantees that no exchange loss would be suffered in the process. The specific statements and their contexts suggest to us, however, that the proponents have much more in mind.

serves in maintaining the dollar rate should we run into balance-of-payments troubles.⁸

It might be, however, that the guarantee would make the dollar such an attractive reserve currency that foreigners would be willing to accumulate dollars at a rate in excess of the present rate. It could turn out that despite the increase in our short-term liabilities to foreigners because of our gold purchases and despite the decreased value of our gold stock for purposes of defending the dollar exchange rate, defense of the dollar *might* be easier than it is now because of an increased willingness on the part of foreigners to invest in dollars. The essential point is that there is no way of knowing whether or not this will be the course of events; that is, the degree to which foreigners will be willing to go on to a *dollar standard* is uncertain.

If the guarantee proposal results in increasing our purchases of gold while, at the same time, making our gold stocks of less use, the question arises whether, if guarantees are to be introduced, the United States should abandon its present policy of buying all gold offered at the current official price. In this event, the exchange guarantee would have to be expressed in terms of other currencies; as before, the guarantee would be invoked only when the exchange ratios are changed at our initiative. Under this system foreigners would be more willing than under a gold purchase policy to exchange their currencies for dollars in order to replenish their international reserves. In this process, the United States would accumulate the kind of foreign exchange most useful in supporting the dollar rate under a guarantee system. Implied in this policy, however, is a fall in the price of gold on the open market. This note is not the place to discuss the ramifications of that outcome, but it is clear that an exchange guarantee is not a simple expedient. Moreover, we would stress the irony of all this: whatever our gold policy, it turns out that a system of exchange guarantees whose major *raison d'être* appears to be to protect our gold stock ends up by greatly reducing its usefulness for international reserve purposes.

Thus far we have accepted the heroic assumption that an exchange guarantee is credible to foreigners. Considerations of prestige and honor would make the United States reluctant to renege, once the guarantees had been given, and thus would go some distance toward creating credibility. But whether foreigners believe the guarantees will be honored will also hinge on their view as to what they might cost us. If the guarantee is never used, and if our international accounts never get into a position where we would otherwise have devalued, then there is no cost. And if others anticipate all this will happen, then the system is fully credible. But under these conditions and expectations there is no need for the guarantee.

If it is anticipated, however, that we might at some time have to devalue,

⁸ Of course, for a time at least, central bankers being what they are, foreigners will no doubt be willing to sell us dollars or their own currencies for gold offered at the official United States price even though a rational calculation shows dollars to be superior to gold. Even if our gold should prove virtually worthless in supporting the dollar, an imbalance in our international payments positions could be cured by tolerating a price for the dollar in the open market (to which the guarantee presumably would not apply) which is less than the "official" price. But this comes close to revoking the guarantee.

the cost will be seen as the increase in claims on our real resources that are awarded foreigners as a consequence of the write-up of their dollar assets over what they would have been in the absence of a guarantee. This real cost to the United States could run into many billions of dollars—especially since it would probably be administratively impossible to prevent all sorts of privately held dollar assets of both foreigners and Americans from being sold to foreign central banks and governments and thus coming under the guarantees even though the intention was to restrict it to official holdings.⁴ Such costs might raise doubts as to the system's credibility.

Moreover, we might pay this price for the advantages of the guarantees but not accomplish the planned change in the exchange rate. This would happen if, after the United States devalued and the covered dollar claims of foreigners were written up, the holders of such balances themselves devalued. Our initial action would not have changed the exchange rate—the purpose of the devaluation—but it would have made a substantial gift to foreigners. This outcome would be intolerable.

This problem might be resolved if agreement could be reached whereby those nations whose balances were written up under the guarantee provision and who subsequently devalued would reimburse the United States, the magnitude of such reimbursement to depend on the extent of their devaluation and on the time elapsed between the U.S. devaluation and theirs. That such complicated arrangements would be difficult to negotiate is obvious.

It may be argued that the cost of writing up foreign dollar assets in the event of a devaluation of the dollar is more apparent than real inasmuch as devaluations are usually associated with inflation, and in the absence of write-up the foreign holders would have had the real value of their assets cut. On this, three comments may be made: first, whatever equity considerations may call for, the guarantee system does impose costs, costs that have not existed under current arrangements either here or abroad. Second, devaluation of the dollar might be designed to correct a balance-of-payments problem that has arisen from shifts in demand unrelated to relative movements in price levels. Third, even if a devaluation were attributable to inflation in the United States, many of the dollar claims benefiting from the exchange guarantee would either have been recently accumulated or only recently have become the property of the holder at the time of the devaluation. In either case, the holder of the asset has already taken account of the inflation and the implementation of an exchange guarantee would constitute a windfall gain to the holder at the expense of the U.S. economy.

The only way to avoid the real cost of increasing, through the guarantee, the claims of others over our goods and services is never to permit the exchange value of the dollar to fall. Indeed, some have argued that one of the attractions of an exchange guarantee is that it would only commit us to avoid doing what we do not want to do anyway. It is easy to agree that we should not devalue the dollar now. But it is quite another thing to bind one's hands

⁴ Indeed, to prevent the sale of private holdings to official institutions would not only be to discourage the centralization of the world's international reserves but would be to create several categories of dollars and a multiple exchange rate system.

for the future. There is ample history showing that there are worse policies than devaluation, even by important international financial centers. If we and other nations continue to pursue such economic, political and military policies that the United States generates an external deficit sufficiently large to raise doubts as to the future value of the dollar, then making it more difficult to change the exchange rate may well have the effect of forcing us to adjust by imposing new restrictions on imports or some other policy equally repugnant to those who regard themselves as economic liberals. There are already all too few adjustment mechanisms, as we have been discovering.

To sum up, if exchange guarantees were to prove credible, they would have the great advantage to us of increasing the amount we could borrow at any one time on short term from abroad and of reducing virtually to zero the foreign demand for our gold. But for that very reason our gold stocks would become much less useful in supporting the dollar should pressure on the exchange rate arise. If the guarantees were to prove not credible, then, to institute the system would be a disaster, for it would fail in its purpose, cost us real goods and services if implemented, and, if abandoned, would be a signal for new runs. The guarantees would also go far toward removing exchange rate alterations from our arsenal of possible adjustment mechanisms and thus increase the likelihood of higher import barriers in times of stress. In any event, exchange guarantees are not a simple device and they are not likely to contribute much toward overcoming whatever defects the present international monetary system may have.

STERIE T. BEZA and
GARDNER PATTERSON*

* The authors are assistant professor and professor of economics at Princeton University. They wish to thank the members of the Princeton University Seminar, "Problems in Modern Economics," for a number of helpful comments.

The Wellesley Undergraduate Tutorial

With the aid of a grant from the Carnegie Corporation and the support of the Joint Council on Economic Education, the department of economics at Wellesley College has completed a two-year experiment aimed at developing an undergraduate tutorial program. Details of the experiment itself would hardly be of general interest, but the permanent tutorial finally adopted has proven merits that may appeal to other economists. The chief features of the Wellesley Tutorial are as follows:

1. In the spring of each year, a number of junior majors are chosen to act as department tutors to all incoming freshmen electing the survey course for the following academic year. Apart from details, the survey course at Wellesley conforms to the familiar pattern of introductory year-courses employing such basic texts as Samuelson, Harriss, or Bach. The tutors are selected mainly on the basis of their academic records, promise as teachers, and intensity of interest in the experience. They are given the full plan of the program immediately, together with textbooks and accompanying material for summer study.

2. All economics courses at Wellesley meet twice a week for classroom instruction for periods of sixty minutes. The survey course is an elective, and is usually taken by some two-hundred students in about a dozen sections taught by all members of the staff. Separate sections are organized for freshmen, and in recent years there have regularly been two of these composed of approximately twenty students each. In addition to their classroom instruction, all freshmen meet with their tutors in groups of a half-dozen or so once a week. The tutoring at Wellesley is limited to freshmen, not because they need more help than upperclass students, but because the department can currently provide no more than eight or ten qualified tutors each year, and the early interest in economics evidenced by freshman election tends to maximize returns from the scarce resources.

3. No assignments are made for the weekly meetings of tutors and tutees. Times and places of meetings are arranged by the participants to suit their own convenience, and most are held in dormitories in the evening. The objective is to provide an informal setting for discussion of both the current work of the course and economics in general under the guidance of a competent undergraduate.

4. An essential feature of the Wellesley Tutorial, and a principal reason for its success, is the special program of study that all tutors must undertake for academic credit. No credit can be earned for the tutoring itself. But the tutors as a group are exposed to an experience designed not only to insure their competence in the tutoring, but also to afford educational opportunities not ordinarily open to undergraduates.

5. Every tutor naturally prepares herself on the current topic of the survey course in advance of the next meeting with her tutees, to at least the extent of reviewing assignments and accompanying materials in students' and instructors' manuals. In addition, advanced assigned reading is given all tutors on the same topic. Then, each tutor must pursue some aspect of the topic independently, and be prepared to deliver a lecture presenting her results, and to defend them before a critical audience. Tutors are given complete freedom in their independent studies, and may investigate any specific problem suggested by their tutees, by a staff member, or by their own curiosity. The only restrictions are those imposed by the structure of the program, which insures that at least minimum standards will be met.

6. A two-hour meeting of all tutors is scheduled once a week. During the first semester, the department chairman, who directs the entire tutorial program, conducts these meetings, and calls on any tutor without previous notice to deliver a brief formal lecture on the current topic, contributing something beyond the assigned reading to a knowledge of the subject. The lecturer must answer any question raised by anyone present, and audience reaction, supplemented by the comments of the department chairman, indicate to her the quality of her performance. No mid-year grades are given; a chief aim in the first semester is to make certain that all tutors gain enough experience with the program to enable them to continue it without close direction during the second semester.

7. Since the Wellesley Tutorial is designed to contribute at least as much

to the education of the tutors as of the tutees, the two semesters of the academic year are made the dividing point between directed and independent action by the tutors. During the second semester, the department chairman ceases to conduct the tutors' weekly meetings, and attends them at only such intervals as will satisfy him that all is going well, and that he is properly prepared to turn in final grades for all tutors at the end of the year. The whole plan of advanced study is turned over to the tutors themselves, and they agree upon lectures, special topics, and all other relevant questions, with a bare minimum of guidance. The last student lecturer at each tutors' meeting automatically becomes chairman of the next, and submits a short written report to the director of the program, covering the main points of the meeting at which she presided and intentions for the near future.

8. The department chairman directs the whole Wellesley Tutorial mainly for reasons of administrative efficiency. The tutors, having been carefully selected, are treated as junior colleagues by the staff, and are given complete responsibility for their work with tutees. As department representatives, the tutors must have both prestige and genuine authority, and clear channels of communication between them and the department chairman are essential. By directing the advanced studies of the tutors as well as their tutoring, and by teaching one freshman section of the survey course as well, the chairman is in a position to keep himself fully informed concerning all aspects of the program, and to take effective action immediately on any problems that may develop. Since it is understood by tutees that their tutors are vested with the same disciplinary powers as any member of the regular faculty, occasion for their exercise does not arise, and the department chairman can, in fact, handle all problems by brief conferences with the tutors concerned.

9. Tutors are encouraged to consult all members of the staff freely on questions related both to their tutoring and to their advanced studies. Tutors do not grade their tutees. But there is a continual exchange of information between the tutors and the staff, so the progress of the tutees comes under closer scrutiny than that of other students. As the same time, the relations between tutors and all department members insure that the specialist on any given topic can not only supply advice on sources, but also visit the right tutors' meetings to see what has come of his efforts. Since during the second semester all these meetings are open to the public, the tutors have always to take account of the possibility that a member of the college teaching faculty or administration, or a visiting economist from another institution may appear unannounced to observe or participate in some part of any program. Indeed some pains are taken to make sure that such guests attend at brief intervals. The student chairman of each meeting, however, is not merely acting the role; she is authorized to conduct the program exactly as she sees fit. Thus, a distinguished visitor may find his contributions to a discussion welcome or otherwise, and no considerable interference with a meeting can occur.

10. As a part of the experiment, independent studies of it were conducted by Stanley P. Wronski of Michigan State University. He found that the tutees were appreciably more interested in economics, and better informed both on technical points and generally than students not eligible for tutoring under

the plan. The tutors were shown to have carried over their experience to markedly improved performance in other courses, and to have been inspired to pursue careers in economics either in research or in graduate schools. Wronski's cost study showed further that the additional teaching and administrative load on the department chairman approximated that of an ordinary undergraduate seminar during the first semester, and was substantially lighter during the second.

RICHARD V. CLEMENCE*

* The author is professor of economics at Wellesley College.

Windfall Income and Consumption—Additional Evidence

In a recent issue of this *Review*, Ronald Bodkin [3] employed data from the 1950 Bureau of Labor Statistics Survey of Consumer Expenditures to test Friedman's permanent income hypothesis. The National Service Life Insurance dividends paid out early in 1950 were regarded as windfall income, and two regressions were computed, both using disposable income and windfall income as independent variables. In the first equation total consumption was the dependent variable while in the second equation durable goods purchases were excluded. The regressions showed "that the marginal propensity to consume out of windfall income does not appear to be appreciably lower than the marginal propensity to consume out of regular income" [3, p. 614]. And this "strong tendency to spend windfall income" is at variance with the permanent income hypothesis.

Since data concerning the behavior of windfall income recipients is relatively scanty, and since such data can constitute an important test of the permanent income hypothesis, it is of interest to bring to bear on the hypothesis whatever information is available. One such body of evidence is contained in the Israeli Survey of Family Savings of 1957/58.¹ That survey collected data on the behavior of recipients of lump-sum personal restitution payments from Germany. About 4 per cent of the urban population received such payments during the year covered by the survey, averaging 3000 Israeli pounds per recipient family. Average disposable income of these families was £3400. Since the payments considered here were nonrecurring and since they were not anticipated well in advance, they can be regarded as windfall income.

In order to appraise the effect of restitution payments on consumption, the behavior of spending units receiving such payments was compared to that of nonrecipients belonging to the same socio-economic group. It was found that "consumption outlays (including the purchase of durable consumer goods) per pound of current income were about $3\frac{1}{2}$ times as much as outlays per pound of one-time receipts" [2, p. 18]. In the case of nondurable consumption the equivalent ratio was $5\frac{1}{2}$. On the basis of this comparison it was esti-

¹ The survey, covering the year ending in March 1958, was a joint effort of Israel's Institute for Applied Social Research, the Falk Project for Economic Research in Israel, the Bank of Israel and the Central Bureau of Statistics. The sample of 3000 households was representative of the Jewish urban population in March 1958. For discussion see [1] and [2].

mated that 45 per cent of the restitution receipts were saved in the form of liquid assets and another 20 per cent invested in real estate.

Similar results can be obtained by subjecting the data to multivariate analysis of the type employed by Bodkin. Two-thirds of the 120 restitution recipients that fell into the sample were spending units headed by employed salaried individuals aged 20-55² (a group with reasonably homogeneous consumption behavior). These cases yielded the following regression equation:

$$C = I\text{£}397 + .857y + .167r \quad R = .769$$

$$(412) \quad (.105) \quad (.156)$$

where C is total consumption including expenditures for durable goods, y is disposable income exclusive of restitution, and r is restitution payments. The marginal propensity to consume out of windfall income is .167. It is only one-fifth of the marginal propensity to consume out of current income. When durable goods are excluded from consumption, the marginal propensity to consume nondurables out of windfall income is .156. Since the term "consumption" as used by Friedman is broader than the strictly nondurable concept, the marginal propensity to consume relevant to this hypothesis would be somewhere between .156 and .167. The smallness of this figure is consistent with the permanent income hypothesis.

In commenting on Bodkin's results, Milton Friedman suggested the possibility that the dividend payments were partly a proxy for a permanent income. Thus, he writes: "My casual inquiry sufficed to show that it is not implausible to suppose a connection between the size of the dividend payments and factors connected with permanent income" [4, pp. 197-98]. There are hardly any a priori reasons for expecting such a relation in the case of restitution receipts by Israelis.³ Indeed the data reveal a low correlation⁴ between windfall and current income with $R_{r,y} = .34$.

To be sure, the data used in this study are not comparable to those employed by Bodkin. First, availability of goods on the markets varied greatly between the two countries. Second, the reparation payments in Israel were much larger relative to current income than the insurance dividends in the United States, and the difference between Bodkin's and my results may be due to this factor. The possibility of a relation between the relative size of the windfall and the marginal propensity to consume out of it can be examined by computing the following regression equation:

$$C = a + by + cr + d \frac{r^2}{y}$$

where

$$\frac{\partial c}{\partial r} = c + 2d \frac{r}{y}.$$

²I am grateful to M. Sandberg of the Israel Institute for Applied Social Research for providing the data for these spending units.

³The ratio of windfall to disposable income varied from 6 to 386 per cent.

⁴Bodkin has meanwhile computed the correlation between the regular and windfall income in his data and found it to be .092.

If d were negative and statistically significant then the marginal propensity to consume out of windfall income would be lower the higher is the ratio of windfall to disposable income. The results do not confirm the existence of such a relationship:

$$C = \text{I}\pounds 460 + .930y - .075r + .098 \frac{r^2}{y} \quad R = .774$$

(413) (.119) (.195) (.076).

In addition I tested the possibility that the marginal propensity to consume out of windfall income is related to the absolute level of disposable income by computing the following regression equation:

$$C = a + by + cr + d(yr)$$

where

$$\frac{\partial c}{\partial r} = c + dy$$

Again no such relationship is shown by the data:

$$C = \text{I}\pounds 364 + .863y + .176r - .0000014yr \quad R = .769$$

(609) (.136) (.135) (.0000195).

Finally, it must be noted that the evidence presented here relates only to the year in which the windfall income was received. Thus, it is quite possible that the assets accumulated out of the windfall were earmarked for future consumption. A test of this hypothesis would have required data (preferably re-interviews) covering subsequent years.

MORDECHAI E. KREININ*

REFERENCES

1. BANK OF ISRAEL, *Annual Report for 1958*, Jerusalem, May 1959, pp. 253-68.
2. BANK OF ISRAEL, *Bulletin No. 10*, pp. 17-41.
3. RONALD BODKIN, "Windfall Income and Consumption," *Am. Econ. Rev.*, Sept. 1959, pp. 602-614.
4. M. FRIEDMAN, "Comments on Bodkin's Paper," *Proceedings of the Conference on Consumption and Savings*, edited by I. Friend and R. Jones, University of Pennsylvania Press, 1960, pp. 191-205.

*The author is associate professor of economics at Michigan State University. He is indebted to the University Research Fund of Michigan State University for a grant in support of this project, and to C. Hildreth, M. Friedman and R. Bodkin for helpful suggestions.

A Model of Price Flexibility: Comment

Joseph V. Yance's recent study of price flexibility [2] employed a concept of price flexibility and measurement techniques similar to those I used in an investigation of price response rates in fourteen industries, including leather

footwear [3].¹ I should therefore like to (1) summarize my general findings in order to make it clear that the slow response rates Yance discovered in the footwear industry should not be taken as typical of manufacturing in general; (2) present evidence against his assertion [2, p. 415] that "the delay in raising prices can account for another aspect of recent inflation trends, that prices have continued to rise even though demand has slackened and wages have stopped rising."

1. Monthly indexes of output price and direct costs in each industry were constructed from BLS data for the period 1947-58. These were employed in a distributed-lag regression analysis in an effort to ascertain the rate of price response to changes in direct costs. The findings indicate that prices in these industries tended to respond quite rapidly to cost increases—normal gross margins were generally restored with a lag of only 1 month for wage-rate increases. For material-cost increases response was somewhat slower—prices generally rose by an amount equal to the cost increase within 2 months. Only the responses to cost decreases showed significant lag. While it might be dangerous to generalize from a sample of 14, these results at least serve to indicate that the rapid response rate ("average delay" of 1 month) which Yance found in leather tanning is probably more typical than the slow response rate ("average delay" of 4 months) he found in footwear.

Moreover, my findings suggest that in leather footwear the average delay in price response was only about 2 months for cost increases, but much longer for cost decreases. These results are substantially in accord with Yance's finding of an over-all delay of 4 months, but conflict with his conclusion that downward response occurred as rapidly as upward response (or more so).²

2. My findings lead me to believe that where recent (1955-58) price increases cannot be fully attributed to contemporaneous increases in direct costs, they reflect rising gross margins rather than delayed responses to previous cost increases. I am thus in substantial agreement with the views of Schultz [1, Ch. 5] who attributes the increase in gross margins to rising overhead costs, rather than to increased profit margins. In this sense the price increases were "justified." For a firm operating under competitive conditions, however, the question of justification may have little relevance. It may be impossible for the competitive firm to raise prices every time overhead costs go up, especially when the cost increase results from an unwarranted expansion of capacity as Schultz suggests [1, pp. 122-25].

The argument has so far been conjectural, but evidence of its applicability to recent U.S. experience is presented in Table 1. In the absence of data on overhead costs these indexes are far from conclusive, but they suggest that inflationary pressures were more fully translated into price increases in the con-

¹The industries studied were: bituminous coal, cotton broadwovens, seamless hosiery, leather footwear, gray iron foundries, construction and mining machinery, valves and fittings (all "unconcentrated"); and tires and tubes, rubber footwear, glass containers, plumbing fixtures, internal combustion engines, agricultural machinery, motors and generators (all "concentrated").

²[2, p. 414]. Note that his data for 1950-52 (Figure 5, p. 413) do not support his conclusion. On the downturn predicted price corresponds closely to actual price, but on the upturn price rose more rapidly than predicted.

TABLE 1—INDEXES OF PERCENTAGE GROSS MARGINS
(1947-49 = 100)

	Unconcentrated Industries	Concentrated Industries
1955 January	96.2	101.3
April	95.5	100.9
July	95.1	99.9
October	96.3	101.2
1956 January	96.3	102.2
April	96.7	102.1
July	97.6	103.0
October	98.6	103.5
1957 January	98.4	103.7
April	98.2	104.0
July	97.7	103.5
October	98.4	104.3
1958 January	98.2	105.8
April	97.2	106.3
July	97.2	105.5
October	97.2	105.1

Source: Margin = price/(labor costs + material costs); computed in [3].

centrated group than in the unconcentrated, and they cast considerable doubt on the hypothesis that recent price increases reflect only belated restorations of normal gross margins.

WESLEY J. YORDON, JR.*

REFERENCES

1. C. L. SCHULTZE, *Recent Inflation in the U.S.*, Study of Employment, Growth and Price Levels, Joint Economic Committee, Washington 1959.
2. J. V. YANCE, "A Model of Price Flexibility," *Am. Econ. Rev.*, June 1960, 50, 401-18.
3. W. J. YORDON, JR., *Industrial Concentration and Price Flexibility in Inflation*. Unpublished doctoral dissertation, Harvard University, 1960. A condensation will appear in *Rev. Econ. Stat.*, 1961, Vol. 43.

* The author is assistant professor of economics at the University of Colorado.

A Model of Price Flexibility: Reply

I get the average delay by seeing how much the price changes, in one period, in response to a "price gap"—a difference between a desired price, based on current costs and normal margins, and the actual price, lagged. I plotted this relation (Figure 1) to see whether my figures were right and it appears that they are. There is no apparent difference in the slope of ΔPS_t relative to a positive, as compared to a negative, price gap. Right after Korea, the price response was greater (faster) than average, but in 1947-48 it was slower than average.

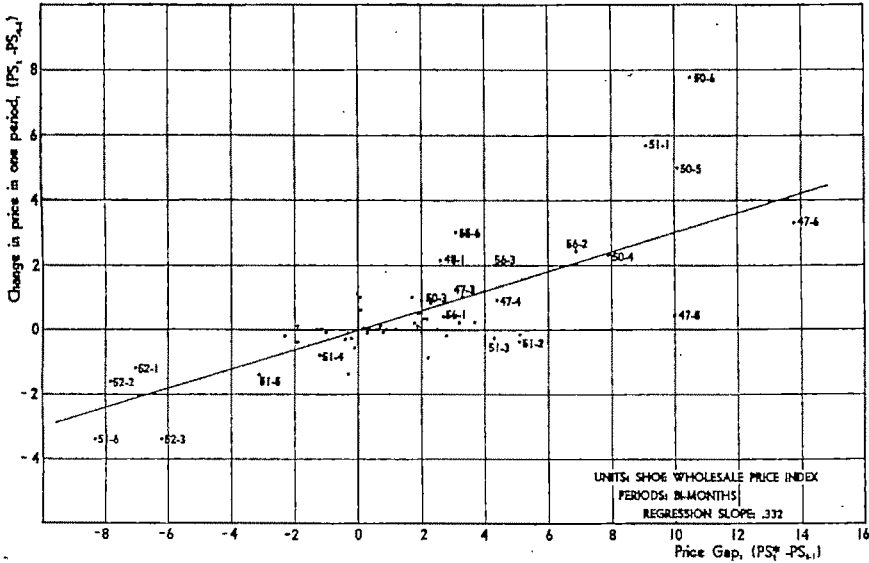


FIGURE 1. RATE OF PRICE CHANGE IN RELATION TO THE EXTENT OF PRICE DISEQUILIBRIUM

The essential difference between our approaches is that Yordon is estimating the individual weights on past cost changes, whereas I assume a particular exponentially declining form to this weighting function which is defined by only one parameter, the response parameter.

I thought his method of constructing a cost index, using the input ratios from the Census of Manufactures was good. I had relied only on the regression to get the weights for the wages and materials price indices. Also, his method of estimating the individual lag weights showed that some of the response takes place before costs actually go up. My method did not allow this effect to show up, and this somewhat shortens my estimate of the delay, say from 4 to 3.5 months.

However, his method is not very trustworthy for the points he makes, particularly about the lengths of the delays. Where I estimated an average delay of about 4 months, his estimates run about a half month, for rises in wages and materials prices, and 1.76 months for declines in materials prices. The major reason for the difference, apart from the one given in the previous paragraph, is that his method is not very good at picking up the full response, especially that which occurs with a long delay.

A test can be given to show how much of the response is missing. The normal ratio of price to direct costs in his data is about 1.25 or 1.30. If one has an equation in which the change in price is a function of the change in costs in various periods, analogous to his,

$$\Delta P_t = b_1 \Delta C_{t+1} + a_0 \Delta C_t + a_1 \Delta C_{t-1} + a_2 \Delta C_{t-2} + \dots$$

then the coefficients should add up, in this case, to 1.25. Otherwise the equation is not equilibrating; if there is a jump in the level of costs, it will not

carry the price to where it is at the normal ratio to costs. The real system is equilibrating. In the period we are considering, every time costs settle down at a new level, the ratio of price to direct costs settles down to about the same value.

Adding his coefficients, we get:

<i>Complete Response</i>	<i>Wages</i>	<i>Materials (up)</i>	<i>Materials (down)</i>
1.25-1.30	.96	.82	.42

indicating the extent of the measured response, e.g., 77 per cent for wages. It is likely that most of the unmeasured response is that which occurs erratically and with a long delay, for example, the long delay in 1947-48.

On the second point, I think that in looking at the larger inflationary picture, I overstated the length of time it would take price rises to work their way through the industrial sectors, with no wage rises. The recent literature places the discussion of cost-price delays in its proper perspective as one of a series of important links in the inflationary cycle and applicable in some industries more than others.

JOSEPH V. YANCE*

*The author is on the research staff of the Operations Evaluation Group (U. S. Navy), Massachusetts Institute of Technology.

Patterns of Industrial Growth: Comment

Chenery's model of economic development and its application to cross-section data of 51 countries will certainly be welcomed by students of economic development [1]. The purpose of this note is to comment on one of the issues involved: the relationship between economic development and changes in the relative share of various sectors.

Primarily on the basis of evidence presented by Colin Clark [2], it has long been maintained that economic development is accompanied, first, by a relative increase of the secondary sector and, at a later stage, by a relative expansion of the tertiary sector.¹ Chenery now shows that while the share of industry in GNP rises significantly from lower to higher income levels, the share of services displays only a slight increase. The growth elasticity (the regression coefficient of changes in value added in a given sector on changes in per capita income) for primary production is calculated as .494, for industry 1.362, for transportation and communications 1.288, and for other services 1.066.

It is contended here that the use of exchange rates in converting the data expressed in national currencies to a common unit introduces a systematic bias in the estimates, the removal of which would considerably strengthen Chenery's conclusion on the rise of the share of manufacturing at higher income levels and will shed doubt on the hypothesis referring to the relative increase of the tertiary sector. This bias has to do with (a) the underestima-

¹ This proposition may refer to the share of services in real output or in real input (e.g., proportion of labor force). We shall be concerned with the first interpretation here.

tion of income levels in low-income countries, and (b) the underestimation of the share of industry in high-income countries.

To begin with, conversion at exchange rates systematically understates (overstates) the income levels of low-income (high-income) countries.² The explanation is simple: the greater are intercountry productivity differentials in the production of traded goods (manufactured and agricultural products), *ceteris paribus*, the greater will be differences in wage levels. In the field of services, the productivity gap is considerably smaller, while wage increases in the tertiary sector (nontraded goods) follow wage movements in material production, especially industry. Consequently, nontraded goods will become relatively more expensive as development proceeds, and increased productivity differentials will be accompanied by an increasing degree of overvaluation of the per capita incomes of richer countries.

Empirical data give support to this hypothesis. Milton Gilbert's findings [3, p. 28] show that if a geometrical average of per capita incomes measured at U.S. and European (individual country) price weights is calculated, the per capita incomes of various European countries converted at official exchange rates appear to be understated, in comparison with income levels in the United States, by the following percentages: Belgium 17, United Kingdom 26, Norway 26, Denmark 27, Germany 30, France 32, Netherlands 34, and Italy 35 per cent.³ With a change in the ordering of the first-mentioned three countries, this ranking corresponds to ranking according to per capita incomes.⁴

The degree of understatement becomes considerably greater in the case of underdeveloped countries. According to M. F. Millikan, in 1950 the average per capita income in Asian countries (excluding the Middle East) was \$58 converted at exchange rates and \$195 by using a necessarily crude purchasing-power measure. The estimates for Africa are \$48 and \$177 [4, pp. 21, 28]. Another estimate, prepared by the German Statistical Bureau for 1955, uses the per capita income of West Germany as a basis and finds that, converted at exchange rates, the per capita income of Canada is overstated by 80 per cent, that of the United States by 68 per cent, whereas 14 per cent understatement is found for Spain, 17 per cent for Austria, and 23 per cent for Brazil [5, p. 7].

The systematic bias in the per capita income figures used in Chenery's study indicates that the actual range of incomes is considerably smaller (if \$100 per capita income is taken as a basis, possibly by one-half) than estimated. Consequently, adjusted data would show an increase in the absolute value of the growth coefficients, and a more pronounced relative increase of industry (and relative decline of agriculture) for a given rise in incomes. In other words, the rise in per capita income associated with a given degree of industrialization will be less than indicated by Chenery's results. This correction is shown in Figure 1, which is based on Chenery's diagram [1, p. 636].

² Chenery notes this with regard to U.S. data in an appendix to the article, but does not extend the argument to other countries.

³ Data refer to 1955. In view of the fact that the French exchange rate in 1955 was artificially maintained through a combination of taxes and subsidies, the new equilibrium rate introduced in 1958 was used in the calculations.

⁴ United Kingdom, Norway, Belgium, Denmark, Germany, France, Netherlands, Italy.

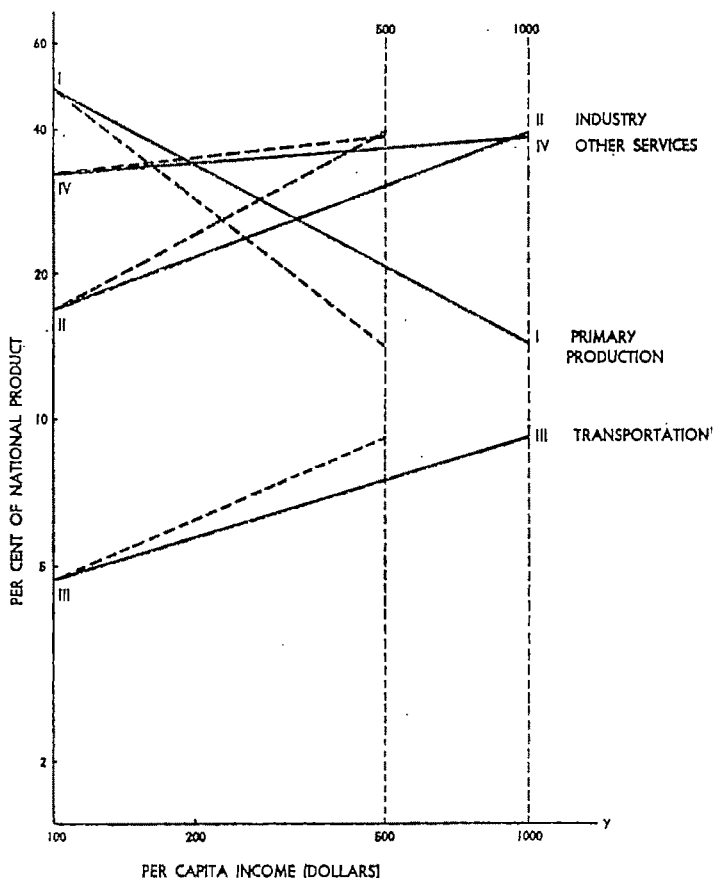


FIGURE 1

The solid lines in the graph depict the original estimates, while the dotted lines refer to estimates corrected by reducing the range of incomes between \$100 and \$1,000 by one-half.

This is not the only necessary correction, however. The differences in relative prices of various product groups between countries also entail the underestimation of the share of industry and an overestimation of the share of services at higher income levels. No attempt is made here to evaluate the extent of this underestimation (overestimation). It is sufficient to note that even an approximately 10 per cent increase in the relative price of services accompanying a 100 per cent rise in per capita incomes would reduce the coefficient of services under 1, and would correspondingly increase the regression coefficient for industry.⁵ Actually, a comparison of price ratios between developed and underdeveloped countries reveals that a doubling of incomes would be associ-

⁵ The second-mentioned correction necessitates a rotating of the lines in Figure 1. In the absence of satisfactory estimates, these changes are not indicated on the diagram.

ated with a change in relative prices substantially larger than 10 per cent.

The conclusion can now be reached that, compared to the results obtained by Chenery, the growth coefficient of industry will rise to a considerable extent (both because of the shrinking of the range of income differences and the correction of relative prices), and the tertiary sector will see its share in GNP declining. The Clark hypothesis, therefore, does not stand up in the light of information on cross-section data.

BELA BALASSA*

REFERENCES

1. H. B. CHENERY, "Patterns of Industrial Growth," *Am. Econ. Rev.*, Sept. 1960, 50, 624-54.
2. C. CLARK, *The Conditions of Economic Progress*, 3rd ed. London 1957.
3. MILTON GILBERT, *Comparative National Products and Price Levels, A Study of Western Europe and the United States*. OEEC, Paris 1958.
4. Statement by M. F. Millikan before the Subcommittee on Foreign Economic Policy of the Joint Committee on the Economic Report, *Hearings, Foreign Economic Policy*, 84th Cong., 1st Sess. 1955.
5. Statistisches Bundesamt Wiesbaden, *Internationaler Vergleich der Preise für die Lebenshaltung*. Stuttgart 1956.

*The author is assistant professor of economics at Yale University.

BOOK REVIEWS

General Economics; Methodology

Encyclopédie française. Vol. 9, *L'univers économique et social*. Société Nouvelle de l'Encyclopédie Française. Paris: Librairie Larousse, 1960. Pp. 1136. \$20.00.

This encyclopedia differs in some essential aspects from the encyclopedias familiar to most readers in the United States. It is not the customary inventory of references in alphabetical order, such as our *Encyclopedia of Social Sciences*. The basic soundness of this kind of collection of information is called into question because of its implicit philosophical foundation. The preface to this 9th Volume of the *Encyclopédie française* rejects from the outset the 18th century view of nature on which modern encyclopedias largely rest, viz., that what is discernible is separable, and that any order of presentation is just as good as any other.

The *Encyclopédie* discards the familiar organization of materials for ready reference, a format which stresses the isolation and independence of the various elements of knowledge, and approaches the task in a fundamentally different manner: the various elements of knowledge are presented as related to one another and as related to the perspectives adopted. Each volume of the *Encyclopédie* is really a systematic treatise of large size.

There is of course a certain exaggeration in this point of view. The elements of a universe of discourse are not only interdependent; they are also individually independent and important. For this reason a detailed topical index in alphabetical order would have been advisable. This independence of the individual items also leaves enough room for reference works of the traditional kind. Good reasons are given, however, why this different kind of encyclopedia, which will find its way into many circles, should seek to open the minds of its readers and induce them to reflection, and not just provide a convenient reference source. Gaston Berger, the president of the committee of the *Encyclopédie française*, expressed this new view in a striking manner:

Day before yesterday we followed unconsciously what was called Nature; yesterday we tried conscientiously to conform to "nature"; but today, our power having grown considerably, it behooves us sometimes to protect nature and sometimes to arrange it in ways which seem favorable. We have somehow become responsible for evolution [9.02.11] . . . a reality is to be constructed and not events awaited [9.62.13].

On first glance, this basic view of the social economy appears voluntaristic, quite in contrast to most current economic reasoning in the English-speaking world. Such a judgment, however, would be in error. The basic view should rather be called indeterministic, in a sense to be developed further in the review.

Berger's statement implies, furthermore, an inclusive definition of the social end toward which all economic activity is directed; an end which, it is said, is already forming the development of the Western world and waiting to be made more explicit. "Economy without indigence and Society without coercion" [9.06.9; 9.02.10]; this is and ought to be our goal.

The volume has been prepared under the direction of François Perroux. He contributes the introductory article, "La science économique," in which he sets the tone for all the other articles by spelling out the meaning of two characteristic features of the social economy he sees emerging in modern economic reasoning: (a) the indeterministic or stochastic approach as the basic method of economic science; and (b) the explicit inclusion of the ends of actions and policies in explanatory structures.

Perroux closes the volume with an article which is both a resumé of the entire work and a call for further study of the notion of progress. He arrives at the following three specifically "social" components of the economy: (a) *creation*, a generalized innovation, including variations of institutions and attitudes; (b) *propagation* of the fruits of creation, not to be confused with functional distribution, since the former involves also the change of production functions and institutions; (c) *significance* of such development, intelligible to all and emanating in common projects [9.72.11].

Although Perroux's well-known views on the nature of economics are encountered in many parts of the volume, it is not one man's work. A veritable galaxy of other eminent contributors shares his vision. The work is thus representative of an important sector of French scientific effort.

The prime object of the volume is the description and analysis of economic development, founded on a generalized concept of Schumpeterian "innovation," the fruits of which are propagated stochastically toward global and knowable ends. The key terms of this analysis of development may best be gathered from the articles devoted to a phenomenological description of time and space in economics. The current assumption of a single objective time of events in dynamic models is seen as an impoverishment of analysis, since it does not take into consideration the many varied meanings of the chronological order of events for those who perceive or endure them.

From the diversity and plurality of meanings of the sequence of events, the various contributors conclude that economic phenomena are not to be interpreted and guided by deterministic models, but rather by stochastic models chosen under conditions for efficient action [9.68.3]. Many aspects of such models are considered and examples are given from the Common Market, the French Community, and other similar experiences.

A detailed analysis shows that economic development involves the emergence of large interterritorial businesses, which continue to compete without destroying the smaller enterprises in the process. The following statement expresses this relationship: "An economic law could be laid down, according to which the proportion of small-and-medium-sized businesses remains constant relative to other forms of production and distribution [9.10.12]." Unfortunately, this law is not derived formally from the three basic propositions

(creation, stochastic propagation, and significance) as it might have been.

The remarkable persistence of competition among giant enterprises and the apparently stable distribution of business size is well known to U.S. readers from the work of Kaplan on competition, and of Adelman, Simon and Bonini, and others dealing with the log-normal or Yule distribution of the sizes of businesses. These names, unfortunately, are omitted in the encyclopedia's bibliography.

Since economic development is the central theme of this volume, the stable features found in development might have been grouped together and considered in greater detail. In this respect Phelps Brown's discovery should have been mentioned, viz., that the size distribution of trade unions appears also to be approximately log-normal. Other investigators have suggested that the same is true of the distribution of personal wealth. It is, moreover, surprising to find that R. Gibrat's name is mentioned only in passing, although one of the major theses of the volume is that modern economic science must be stochastic. Gibrat, after all, produced one of the most carefully worked out and widely studied stochastic economic models we possess at the moment.

The second foundation on which this imposing thought structure rests is the analysis of interacting ends and means and of the economic motive power in these processes. This part of the task is carried out in a large section on social conflicts and dialogues. The *Encyclopédie* presents an excellent typology of social antagonisms, as well as a description of agreement, which is the end of the social dialogue.

The reader is informed that economic analysis has heretofore used either one of two thought models: One which excluded conflict, and one which was founded on conflict [9.58.3]. Such a dichotomy is shown to be incomplete, because conflict may be resolved through a dialogue, which is neither completely conflict nor absence of conflict. "It is a kind of reconnaissance, an acceptance of the other as partner. In the dialogue the partner does not disappear; instead each participant accepts his own progressive transformation by a power, emerging in the process [9.58.5]."

In the fictitious dialogue, there is no such power, as was the case in the rendezvous of government, unions, and employers called by Mendes-France; none of the parties involved was capable of changing its former ways [9.58.13]. It is equally missing if there be merely good will in the participants and in certain other cases examined.

The true dialogue does not create the significance of the common work; it is rather a secondary cause, which selects some from among the many alternatives, each energized by the consensus reached. It is worthy of note that this analysis of the dialogue in the *Encyclopédie* parallels the conclusions reached by the Molinist theologians in the famous Jansenist controversy on human freedom in the 16th century.

The convergence to agreement of the social dialogue can be speeded up [9.62.9]. This possibility puts economic forecasting in a new light; forecasting becomes, instead of a statement about future events, an instrument for the reduction of uncertainties and incompatibilities among individual plans and

actions by describing an ensemble, permitting rapid revision of projects. In this connection, the reader will also find a refreshing discussion of the trade cycle in economic development.¹

Looking at the volume as a whole, it appears that the underlying thought structure is related to what Neyman has called dynamic indeterminism in science ("Indeterminism in Science and New Demands on Statisticians," *Jour. Am. Stat. Assoc.* Dec. 1960, 55, 625-39). Neyman defines dynamic indeterminism as an effort to invent a hypothetical chance mechanism, called a stochastic model, operating on various clearly defined hypothetical entities, such that the resulting frequencies of the various possible outcomes correspond approximately to those actually observed. It is called indeterministic because there are no a priori explanatory functions of the variable to be explained; instead, this variable is taken to be random, and its values and distribution depend on values obtained by other variables. It is called dynamic because it contains the explanation of the motive power (\emptyset) as part of the model.

Comparing the theory of development presented in the *Encyclopédie française* to Neyman's treatment, we find the following analogies. The hypothetical entity is the creative act which produces net gains. These results of innovation are then propagated dynamically, in a manner analogous to the chance mechanism mentioned by Neyman [cf. 9.72.16].

According to Neyman, the scientific value of such a model depends on the degree to which it satisfies two criteria. First, the criterion of broad applicability, i.e., the possibility of deducing from the model verifiable consequences, relating to categories of observation other than those for which the model was originally constructed. The various articles of the *Encyclopédie* on the size distribution of enterprises and of personal incomes, on the pluralistic structure of the social economy, on polarization of economic development, on the disappearance of the proletariat, on the rise of the middle class, on the emergence of regional units, etc., describe observable features of the social economy which can be deduced from the dynamic stochastic model sketched above. The central underlying thought model of the *Encyclopédie* thus meets Neyman's first criterion for usefulness.

Neyman's second criterion for the value of a stochastic model concerns the possibility of identifying empirically the hypothetical entities involved in the model. In the *Encyclopédie* the entity is the innovational act. It is identified and described in considerable detail in the articles on research, on automa-

¹ The scheme underlying this analysis could be formalized in the following manner. Throughout the articles of the *Encyclopédie* emphasis is placed on the transformation of the structure of attitudes under the impact of the emerging power. The input of plans and of projects as well as of actions into the social dialogue continues, but they are never completely consistent with each other. There are therefore three variables: X_i the varying structural coefficients, x_i the varying inputs, and ϕ the emerging power. The problem is to show that the double variation of X_i and x_i , i.e., the diversity of personal plans and of actions can be reduced to a knowable kind of unity. If we assume that the two types of variation are continuous, this thought model leads to the incomplete Pfaffian expression $dP = \sum X_i dx_i$; $X_i = f_i(x_1, x_2, \dots, x_n)$; its solution ($d\phi = dP/T \geq 0$) shows clearly the social nature of the emerging power, resulting from the integration of divers parts into a unity. It is specifically social and not reducible to any one or all of the individual inputs.

tion, on nuclear power, on public innovation, and on changes in institutions.

In the preface to the *Grande encyclopédie*, the ancestor of the traditional encyclopedia, D'Alembert remarked: "Enfin, nous avons trouvé le vrai système de la Nature." The philosophical system of the older Encyclopedists has indeed been of enormous influence on the economic thought and life of mankind. It has shown, however, its shortcomings increasingly, and is now giving way to stochastic and dynamic forms of analysis. The new *Encyclopédie française* may well be remembered gratefully by future generations as marking the beginning of another fruitful epoch in economic analysis.

JOSEF SOLTERER

Georgetown University

Econometrica Essays in Honor of Ragnar Frisch. Edited by Robert H. STROTZ and EDMOND MALINVAUD. Amsterdam: North-Holland Publishing Co., 1960. Pp. 325. \$5.00.

It is a remarkable tribute to Professor Frisch that this volume honoring him differs so little from the typical issue of *Econometrica*, a journal which he founded in 1933, edited for many years, and has inspired since its inception. The book is, in fact, a hard-cover edition of the April 1960 issue of *Econometrica*.

In his introductory essay, Arrow divides Frisch's work into four broad categories: (1) The theory of consumer's demand; (2) dynamic economics, particularly in connection with the theory of the business cycle; (3) methodology, both generally and in the more narrow statistical sense; and (4) problems of policy, economic planning and programming. With the exception of Erich Schneider's appreciation of von Mangoldt's contributions to price theory, all of the essays appearing in the volume can be grouped around these four topics. That this can be done without stretching the bounds beyond what was necessary to describe Frisch's work in the first place, is indicative not of the editor's care in selection but of Frisch's extraordinary breadth.

Chipman's long essay on the foundations of utility belongs in the first group. It carries the axiomatic method in the theory of choice, which Frisch pioneered, to what some may regard as an extreme degree. Houthakker's paper on additive preferences seems to me to be more in the Frischian spirit: Generalization is valuable, to be sure, but not at the expense of losing touch with reality. For econometrics at least, we need highly specialized theories, with specific implications, susceptible of test. Houthakker provides two such rather specialized models and a test of their implications. Koopmans' essay on stationary ordinal utility and impatience continues in the axiomatic tradition. Stone and Rowe provide some estimates of the durability of consumers' durables, with the interesting conclusion that the durability in economic terms is substantially less than would be supposed on the basis of the physical life alone. The group of papers dealing with consumers' demand closes with Theil's essay on the construction of statistically optimal index numbers. In an early paper on the subject, Frisch pointed out that there are two distinct lines of approach to index numbers: a statistical approach which is concerned with

the optimal specification of a central tendency in the movement of prices and quantities, and an economic approach which attempts to specify an index number relevant to economic well-being. Theil's paper presents a major contribution to the first line of approach.

There are three papers which lie in the area of dynamic economics: Georgescu-Roegen's discussion of semi-Marxian proofs of the breakdown of capitalism, Morishima's presentation of a generalized von Neumann model, and Solow's useful contribution to the theory and estimation of distributed lag models. As might be expected, however, a number of papers on economic policy and planning for growth contain contributions to dynamic economics as well.

In the area of statistical method there are papers by Mahalanobis, Rasmussen, Strotz and Wold. Mahalanobis discusses his method of fractile graphical analysis, which is essentially a method for comparing the distribution of a variate in two populations. Rasmussen's discussion of the transmission of shocks in simultaneous equations systems is disappointing and inconclusive. I personally found Strotz's essay on nonrecursive interdependent systems considered as an approximation to an underlying recursive structure the most interesting and suggestive of the papers appearing in the volume. In the debate over the relative merits of recursive vs. nonrecursive models, few have questioned the recursive structure as an ideal; the main issue has been as to the practical relevance of such models in a world in which our data refer not to days or weeks but to months or years at best. Strotz's point is that it makes quite a lot of difference to estimation when we consider this approximation explicitly rather than implicitly, as has hitherto been the case. He does not go very far towards proving his conjectures but does provide much food for thought. Wold's paper in the same area adds very little to what he has published elsewhere.

Six papers in the volume bear on problems of economic policy, planning and programming. Johansen discusses important qualifications which need to be made to the simple rule that, under conditions of economic growth, the production of each sector will expand in proportion to the income elasticity of demand for its product. Lange discusses the optimal allocation of investment among industries to achieve a maximum rate of economic growth. Tinbergen attempts to solve what might be considered the other side of Lange's economic coin in his discussion of the optimum rate of savings, but his results are inconclusive. Klein's discussion of theoretical issues in the measurement of capacity has a direct and important bearing on the issues raised by Lange and Johansen, as does Samuelson's extension of the LeChatelier principle to input-output systems. The volume closes with a brief note by Tintner on stochastic linear programming.

In evaluating this volume, I think one must conclude that it suffers many of the defects common to *Festschriften*: Many of the papers appear to have been hastily written or to have been snatched from their author's hands before they were really complete. Nonetheless, the volume contains much that is useful and worth reading. One may question the wisdom of publishing this

particular issue of *Econometrica* in hard-cover form, yet it does serve to call attention to the fact that *Econometrica* and, indeed, econometrics are themselves monuments to Professor Frisch.

MARC NERLOVE

Stanford University

Economic Issues of the 1960s. By ALVIN H. HANSEN. New York: McGraw-Hill Book Co., 1960. Pp. xv, 244. \$5.50.

If one of the nation's most distinguished and liberal economists were elected President of the United States, carrying his new and unsullied party with him, what changes in economic institutions could we anticipate? To what extent would his economic program differ from those realized in the recent past or from that currently evolving in the present administration? The answer is provided in Professor Hansen's new book, *Economic Issues of the 1960s*, in which he defines, and formulates a solution for, virtually every economic problem of current significance from automation and social security to the public debt, the gold flow, and labor-management relations. In the ideal state which gradually emerges within the brief but closely reasoned span of 177 pages (excluding appendices), there appear reflections of numerous thinkers, from Plato to John Kenneth Galbraith, but best of all one finds a goodly number of the ingenious innovations that economists have for long come to expect from the eminent author himself.

As in Galbraith's *The Affluent Society*, there is a powerful bias pervading this volume in opposition to the gadget-producing segment of private industry, and its most intimate relatives on Madison Avenue, and in favor of the welfare and cultural activities which in the estimation of both authors can be most effectively managed by government. And in this spirit Hansen exclaims in his preface:

If by 1970 we can have laid a firm foundation for a society in which education has become the "major industry," we shall have gone a long way toward building a truly civilized country—one in which the whole citizenry can *actively* participate in cultural, artistic, and recreational programs, not a citizenry which can merely *sit* and passively view a TV show. Unskilled labor is rapidly disappearing under the impact of automation. Technical skills, science, crafts, and the arts will of necessity place education at the center of all activity, the pivot around which all else revolves. Education will encompass the whole gamut of life from childhood to old age. Leisure without education can be a curse.

But although akin in general point of view, *Economic Issues of the 1960s* bears little resemblance to *The Affluent Society* in the substance of its content. Unlike the latter, which is broadly philosophical, Hansen is concerned with providing a fairly detailed and thoroughly inclusive blueprint for achieving his goal, and with supporting specific proposals with the relevant quantitative and theoretical considerations. His program is presented in three parts, dealing in turn with matters revolving about inflation, growth, and international relations.

Hansen believes that it is entirely possible to maintain a vigorously growing

economy with full employment and without inflation. To this end he advocates an ample variety of new built-in stabilizers (including countercyclical systems of accelerated depreciation allowances, personal income tax rate adjustments, flexible allowances for advertising as a business expense in calculating corporate income taxes, and a direct tax on investment, all altered in a predetermined way "according to agreed-upon criteria of employment, degree of capacity utilization, industrial production, and rates of investment"), as well as a strengthening of some of the old ones such as unemployment insurance. But above all, in order to maintain prosperity, an adequate rate of growth, and also to impart new and more desirable directions, Hansen supports a vast expansion of government enterprise.

In this connection, the author reports his "startling discovery" that since 1947 the absolute level of employment in the material goods sector of the economy has declined, despite a sharp rise in output, while upon the services alone was placed the responsibility for creating jobs for displaced workers as well as for the newcomers to the labor force. This trend, he contends, is due to continue, and reflects not only technological progress, including automation, but also the diminishing utility of new accretions to the flow of material goods. While he does not entirely discount the role of private industry in providing services, he holds that further vigorous expansion must depend upon the extension of public responsibilities in "cultural, intellectual, recreational, and community activities." Here, he has numerous recommendations, including federal programs of medical care, housing, special education, retraining, and distressed-area programs aimed especially at "the submerged fifth," federal TV programs, a system of federally managed "honors" high schools, a Council of Social Values created by act of Congress, community art projects, national resource development, urban redevelopment, and so on, leading perhaps within a decade to a situation in which the services provided by government (at all levels) account for one-half the national income. Financing would be obtained through higher taxes (especially sales taxes) and, in line with the need for a secularly greater money supply, increases in the national debt.

In monetary affairs, Hansen also provides an arsenal of new tools aimed, in general, at strengthening the authority of government in the control of the supply of loanable funds. He proposes freezing "a considerable part" of the public debt into the portfolios of the commercial banks, scrapping the statutory limits on Federal Reserve control of legal reserve requirements, and releasing the gold now held as a reserve against Federal Reserve notes and deposit liabilities. For the underdeveloped countries he advocates a policy of forced saving through controlled inflation and comments in this connection upon relative experience in several of the Latin American nations and (earlier) in Japan. In three appendices, Hansen briefly analyzes "the sweeping rise of urbanization," reviews William Fellner's *Trends and Cycles in Economic Activity*, taking issue with its policy implications, and argues in opposition to J. E. Meade that the public debt functions as a built-in stabilizer.

Given the tremendous variety of topics discussed within so brief a space, it is inevitable that *Economic Issues of the 1960s* would bear an air of arbitrariness in spots and that it would contain some, at least apparent, contradictions.

For example, in opposing the claim that the public debt is a serious burden, Hansen suggests that the holding of government bonds, either directly or indirectly, is very widely dispersed (p. 62), and yet later (p. 171), when reinforcing his proposal for a low rate of interest, calls attention to the transfer problem in servicing the public debt and its effect upon the distribution of income. Again, the author contends that increases in the interest rate would be ineffective in stemming inflationary bursts of investment (pp. 32 and 55), and yet in several other places emphasizes the importance of a low interest rate as a tool for achieving "full investment." A broader canvas would be required to reconcile such views as well as to substantiate adequately some of the other positions taken, and it must have been at least in part in deference to such space limitations, and the curbs this placed both on his analysis and his evidence, that Hansen writes at an early point: "The reader may often disagree with what I say, and he can quite possibly be right."

Economic Issues of the 1960s was written for the student and the layman as well as for professional economists and cannot help but provoke useful discussion both in the classroom and outside. For Hansen's work reflects the conviction that institutions in a democracy are made for men, and not the other way around, and the important corollary that whenever institutions seriously obstruct our goals they can and should be boldly changed.

MELVILLE J. ULMER

The American University

Mathematical Methods and Theory in Games, Programming and Economics.

By SAMUEL KARLIN. Vol. I, *Matrix Games, Programming and Mathematical Economics*; Vol. II, *The Theory of Infinite Games*. Reading, Mass.: Addison Wesley Publishing Co., 1959. Pp. x, 433; xi, 386. \$10.75 per volume.

This important addition to the growing literature on game theory, its applications and offsprings, is the work of an accomplished mathematician to whom we are already indebted for other contributions to economics, especially in the field of inventory control. The two volumes are independent of each other; in fact the first chapter of each is identical, and deals with the definition of a game and the min-max theorem. Also the three appendices and the bibliography, totaling over 60 pages, are identical in both volumes (they deal with vector spaces, matrices, convex sets and functions, and special mathematical topics, respectively). This publishing curiosity is an added expense for the reader who wishes to buy both volumes, but a convenience for those who want to acquire only one. Since Karlin, in Volume I, deals extensively with welfare economics one wonders whether this scheme is an application of his own researches and whose welfare is being maximized!

Karlin writes as a mathematician, more interested in methods than in the realism of the models to which the methods are applied, although the two volumes contain numerous and most valuable applications to concrete, empirical situations and problems. The mathematical treatment is everywhere of the highest competence and every tool that is necessary for proof is used, but no

show is made of the knowledge of irrelevant parts of mathematics, the author certainly not needing to do this in order to impress his readers. Precision and clarity in formulation and proof are outstanding, a statement that deserves to be made since not all mathematicians or those who employ mathematics write clearly, contrary to what most laymen think. Each chapter is followed by examples, with solutions given later, and by historical and bibliographical comments. The work thus fulfills the function of giving an excellent summary of the fields which it considers, relating newest researches, including many hitherto unpublished results obtained by the author and some so far only privately circulated, and of serving as a textbook for courses attended by students with the necessary mathematical sophistication. In considering this work I could not help but think of the tremendous steps taken since the "mathematical" appendix to Marshall's *Principles* or even the level of mathematical penetration in the writings of Edgeworth, Walras, and Pareto.

The first volume is of greater interest to economists than the second. Its first part consists of four chapters describing the essentials of the 2-person zero-sum game with a few economic applications (to bargaining and advertising); the second part deals extensively with linear and nonlinear programming and with economic models. The theory of the 2-person game is amply, but not exhaustively, discussed; for example, the extensive form is little developed, nor is the important distinction between perfect and complete information. Neither is a theory of utility presented which underlies and precedes the establishment of a payoff matrix (except for a brief mention on p. 34). The fact that the author restricts himself to the zero-sum case is regrettable, especially since economists are sometimes inclined to think that this is all that game theory does. There is barely a mention made of the n -person theory (except to say that it is difficult and not yet as fully developed as the 2-person case), although it is in this vastly larger field that some of the most vigorous and original research in game theory is going on at present. Furthermore, it is the n -person situation which is of decisive importance for economics, especially when the payoff is a nonzero sum, i.e., when all participants together gain or lose.

The second part of Volume I is excellent in presentation and application and develops well the intimate connection between programming and game theory which has enriched both. The economic models discussed are the classical ones in their present advanced form. This part ends with the von Neumann model of an expanding economy which in scope and mathematical conception by far transcends Walras and Pareto and which still offers further interesting possibilities. Karlin discusses primarily methods, but appears to consider the standard equilibrium theories also to be faithful representations of reality. This they definitely are not: the basic Walrasian construct is a limiting case only, having very little to do with the true economic problem, which is better described as an n -person game. There no participant faces fixed conditions and as a consequence merely has to solve a maximum problem. In economic reality no maximum problem is given, since no participant controls all variables and cannot treat those he does not control as subject to statistical procedures. There is, of course, much justification of exploring mathematical

methods for the unrealistic Lausanne case; but they will be of little avail when the next step is taken and the true distribution of the control of variables is considered.

The second volume explores infinite games, essentially 2-person games in which infinitely many strategies are available to each player. Applications are to games in which the timing of actions is of paramount importance, as when to shoot in a duel, which can be noisy or silent, or mixed, etc. These are games that have been investigated extensively at the RAND Corporation, and Karlin has had his share in the development of the theory there. The final chapter on poker is of exceptional interest, in particular since this game is perhaps the closest model we have for describing political and economic negotiations.

This is an excellent book which will not fail to influence further work and which will be welcomed by all those who wish to obtain a thorough understanding of the fields with which it deals.

OSKAR MORGENSTERN

Princeton University

Lectures on Modern Economic Theory. By J. K. MEHTA. Allahabad: Chaitanya Publishing House, 1959. Pp. xxii, 221. \$3.00; Rs 7.50.

In this collection Professor Mehta presents nineteen lectures on economic theory of particular interest to modern economists. He devotes approximately one-third of his work to the methodology of economic science. The balance of his material is equally divided between macro- and microeconomics with one lecture devoted to input-output analysis, and one to econometrics.

Mehta disclaims any intent of reconstructing modern economic science because "a science obeys the law of evolution as much as living beings. The present is always born of the past. I have pulled down old structures and wherever I have done so, I have, in my own way, raised new ones. But my achievement is insignificant. I have laid no new foundations." Such a penchant for understatement ought not blind the student of economic theory to the considerable insight and stimulation awaiting him in Mehta's carefully reasoned lectures.

At the outset the author deplors the narrow view of economic theory restraining its practitioners within artificial frontiers where one system of knowledge is said (arbitrarily) to end, and another to begin. Economics as a discipline is but one of many systems of knowledge evolving in our efforts to know reality, or at least various facets of that reality, as it is revealed to us through our senses and our mind. Thus, "a student who pursues his study [of our wants and their satisfaction] to its farthest end must find himself surveying a vast land where the entire field of knowledge displays itself to him in its manifoldness."

Within this conceptual framework, Mehta's lectures are to be interpreted as directing the reader to a fuller appreciation of the interdisciplinary character of true knowledge, to the realization that the objectives we set for our science demand extension of our inquiries beyond the narrow limits set by conventional thinking about its boundaries. "If we want to roll on the surface of our discipline we need not bother to strike friendship with any other science:

if we want to fathom the depth of economics we cannot afford to remain friendless."

I emphasize Mehta's philosophy of economic theory on grounds, not that it conveys the stamp of sincere conviction (as it does), but that it is fundamental to an appreciation of the essence of his logical reasoning and points up the penetrating insight of his contributions. The reader will find numerous occasions to test Mehta's conclusions, for each lecture stands by itself as a demonstration of economic theory's greatest attainment, and yet its most pressing need—to better utilize the conceptual formulations and analytical tools of allied sciences in the pursuit of knowledge. Mathematics, statistics, philosophy, human psychology, sociology, biology, history and mechanics can contribute much to the analysis of economic data, often revealing heretofore unsuspected relationships if effectively applied.

In addition to the invaluable service rendered to students of economic theory, this volume recommends itself as well for the consideration of economic planners and more generally to students of policy formulation and implementation. As Mehta warns, though our economy is concrete and objective, "it is governed by abstract forces, patterned principles, and where human hands shape its form, there is also the invisible hand that shapes its destiny. If we have to remodel our economy we must know the nature of these abstract forces, of the invisible hand."

Alvin Hansen recently observed that the decades of the 'forties and 'fifties witnessed immense forward strides in production and employment, and that these gains are directly attributable to an expanded role of government in remodeling and strengthening our capitalistic system. Whether this conclusion is warranted or not, the role of economic theory in facilitating and giving direction to such attainments is quite clear. Mehta's exposition adds to our knowledge, increasing the probability that new institutional arrangements shaped by human hands shall serve to improve the performance of our economic system.

DON V. PLANTZ

Arizona State University

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

Essays on Value and Distribution. By NICHOLAS KALDOR. Glencoe: The Free Press, 1960. Pp. 238. \$6.00.

Essays on Economic Stability and Growth. By NICHOLAS KALDOR. Glencoe: The Free Press, 1960. Pp. 302. \$6.75.

No one can fail to come away impressed from a perusal of these two volumes, or even just their tables of contents. For they remind us at once of the very broad range of subjects to which Mr. Kaldor has made significant contributions, and the number of his papers which have become classics.

By and large the books are made up of reprints of older articles, most of them well known. There are several exceptions: an interesting essay, "Keynes' Theory of Own-Rates of Interest" (which is rewritten from a portion of an

earlier article), and a short note on "Characteristics of Economic Development," were not previously published. In addition, an article, "Capitalist Evolution in the Light of Keynesian Economics," a delightful attempt to explain the author's economic growth model to a Marxian group at the University of Peking was, until now, relatively inaccessible. These three pieces all appear in the volume on *Economic Stability and Growth*.

There is little more that can be said about the volumes in general except for a warning that they do not make easy reading. Mr. Kaldor characteristically overwhelms the reader with a rush of ideas and arguments many of whose steps are left to be filled in. Moreover, these writings very clearly illustrate that it does not always increase comprehensibility to have what are essentially mathematical arguments presented (almost entirely) in nonmathematical terms.

The most controversial portions of the books (and those which, apparently, still continue to occupy Kaldor's attention) are his recent distribution and growth models, which he has sought to integrate into one. To these subjects the rest of this review will therefore be devoted.

The main objective of this work is, of course, to provide analytic materials in two fields in which the theory is so clearly in an unsatisfactory state. But Kaldor also sets himself a number of subsidiary objectives. The first is to transform the Keynesian apparatus into a full employment analysis which is, I would agree, more relevant than unemployment theory for a model of economic development. Second, he wants to incorporate technological progress directly into the production function. Third, he is fascinated by, and wishes to account for such apparent empirical regularities as the historical constancy of labor's distributive share and of the capital-output ratio. Indeed, he states that no theory which fails to account for these can be "intellectually satisfying."

In somewhat oversimplified form, Kaldor's model consists of three relationships.¹ (1) A (lagged) acceleration-principle investment function. (2) An output growth function which states, essentially, that the rate of growth of production varies linearly with the level of investment. (Because he assumes in this relationship that there is a constant flow of innovations, Kaldor prefers to call this a "technical progress function.") (3) A savings function which postulates two different marginal propensities to save: a higher one for the profit-earner than for the wage-earner.

The first two of these relationships really form an essentially independent growth model of the simplest possible sort. Current investment determines the current rate of growth of output via the output growth function, and this, in turn, determines the next period's level of investment (through the investment function), and so on ad infinitum. The two relationships can best be described, respectively, as a lagged and an unlagged accelerator equation thus:

$$(1) \quad I_t = k(Y_t - Y_{t-1}) \quad (\text{investment equation})$$

$$(2) \quad (Y_t - Y_{t-1}) = a + bI_{t-1} \quad (\text{output growth function})$$

¹ I believe the simplifications serve to lay bare the structure of the model. Incidentally, in some unpublished papers Kaldor seems to have changed his mind on the most significant omission in my exposition—the role of profits in investment demand.

where I and Y represent investment and income respectively. Direct substitution then yields the trivial difference equation relationship

$$I_t = ka + kbI_{t-1}$$

which determines the time path of investment.

This growth submodel to me is the most unsatisfactory portion of the analysis. Most important, the rather obviously extreme oversimplification of the model as a theory of the complex growth phenomenon seems to me to rob it both of explanatory power and of usefulness to the policy-maker. In addition, the analysis suffers from several other shortcomings. Kaldor speaks of (2), his "technical progress function," as "a single relationship between the growth of capital and the growth of productivity which incorporates both factors," and emphasizes that "any sharp or clearcut distinction between the movement *along* a 'production function' with a given state of knowledge, and a *shift* in the 'production function' caused by a change in the state of knowledge, is arbitrary and artificial" (*Stability and Growth*, p. 265, his italics). Yet on the very next page the technical progress function curve shifts with the rate of flow of inventions! Surely, to set up a functional relationship of the sort Kaldor implies he has obtained, we must incorporate in it the variables which determine the rate of flow of innovations, something which we have, at least so far, been unable to accomplish.

Moreover, I am totally unable to reconcile myself to Kaldor's employment of the acceleration principle in a very-long run growth analysis. He unceremoniously rejects its use in short-run trade cycle models (where it often need be used only to represent the fairly innocuous assertion that a rise in output will provide some stimulus to investment) on the ground that it takes time for capital stocks to adjust to production levels so that, e.g., excess capacities may prevent a rise in output from stimulating investment demand. But, from the persuasive position that in an intermediate time period a closer capital-stock production-level adjustment may be expected, he leaps to the astonishing conclusion that, despite technological change, producers will *in perpetuo* seek to maintain the same capital-output ratio. Even more surprising is Kaldor's view that any sort of explanation of the apparent historical constancy of the capital-output ratio can be offered by a model employing the acceleration principle and which thus assumes what it sets out to explain!²

The remainder of Kaldor's model, his distribution theory, is far more subtle and not so easily disposed of. The third of his relationships, the savings function described above, is the core of this analysis, which states that since investment levels are (allegedly) fixed by the considerations already described, desired saving must adjust itself to investment rather than vice versa. But given his savings function, since total income is taken to be fixed at its full employment level, this adjustment can only be accomplished by a redistribution of income—a rise in investment must call forth an increase in profits sufficient to yield the required additional voluntary savings. It follows that profit-

²I find his proffered explanation of the constancy of the share of wages to be no more convincing since it requires both a constant ratio of investment to output (even the acceleration principle does not predict this) and historically constant marginal propensities to save out of profits and wages (*Value and Distribution*, p. 231).

earners can increase their incomes more by holding back savings (i.e., by spending more), for with a relatively low propensity to save out of profits it will take a large rise in profits to get them to make the required contribution to saving. This is the celebrated widow's cruse feature of the model—the more the capitalist spends, the more he receives for further expenditure. Unfortunately, not so happy is the lot of the worker, who, by increasing his consumption, makes it all the more necessary to increase savings via a larger share of profits.

The machinery which produces this result is fairly simple. Given the total level of income, an excess of investment over desired saving causes prices to rise faster than wages because of the stickiness of wages, and so creates the necessary (long run) increase in the share of profits.

What can we say about this theory? First of all, very much to its credit is the fact that it *is* a theory of distribution. After all, it is not very clear that the literature offers us any alternative. At the level of the firm the marginal productivity theory is really a hypothesis about the determination of the magnitude of the demand for inputs, and it tells us relatively little about distributive shares. Unless one is prepared to make very strong assertions about the nature of the production function, marginal productivity theory leaves us with no more than the rather unsatisfying conclusion that the share of wages is somehow determined out of the complex of factor supply and demand relationships by the grindings of the mighty and complicated machinery of the general equilibrium system.

Kaldor's analysis suffers from no such shortcomings. It goes directly to the point—the shares of profits and wages—and shows directly how these can be determined in terms of the values of a few well specified parameters.

Yet, one cannot feel completely happy about the construction. One must ask whether, given the level of income, its distribution is in fact the only variable which can produce the significant *long-run* adjustments in savings in which Kaldor is interested. If not, e.g., if the role and structure of the financial system can produce such changes, may not these, rather than income distribution, gradually accommodate themselves to the investment requirements of the economy?

Perhaps more important, we have usually believed that, in the long run, investment often adapts itself to savings and that, for this reason, low savings levels can be a serious obstacle to growth. Kaldor would have us see things the other way round. But, if we reject the rigid long-run accelerator, the level of investment is no longer imposed upon us, and with that, savings are also freed to wander where they will. Perhaps, then, our old fashioned worries about inadequate savings may have some validity after all. In asking such questions I must be careful not to imply that their answers are obvious. I am neither certain that there is no element of truth in the distribution theory nor do I have any better alternative to offer. Indeed, it is all too easy to ridicule any such simple theory whose very simplicity is really a most substantial asset. I only conclude that Kaldor must pardon the profession for

hesitating to leap aboard his bandwagon until it is provided with more conclusive evidence on the relevant facts.

WILLIAM J. BAUMOL

Princeton University

Collected Economic Papers. Volume II. By JOAN ROBINSON. Oxford: Basil Blackwell, 1960. Pp. viii, 281. 30 s.

Over the past decade increasing numbers of eminent economists have given us, in increasing numbers, volumes of their selected essays. These have often been culled from obscure sources, and occasionally (when the initial publication was foreign) presented for the first time in their original English. The present volume represents Mrs. Robinson's third appearance in this particular form of "hard covers." It also represents the quintessence of this form of reprinting: one of the essays included is "The Rate of Interest," the title piece of an earlier collection (1951), now out of print.

This second volume of Mrs. Robinson's collected papers has been divided into four parts, the first two longer than the rest and combining more individual selections. Part I combines two subjects, the general theory of value and the theory of economic development, which Mrs. Robinson (along with the Marxians) feels have been separated artificially through the years by academic orthodoxy. The second section combines the theory of capital and the theory of distribution, of which the same can be said with less claim to originality. In Part III, Mrs. Robinson fouls her own nest, minimizing the import of the static theory of imperfect competition to which she owes her initial reputation and perhaps (if I may hazard a guess) the greater part of her permanent reputation as well. Part IV, finally, returns to monetary interest theory and the problem of inflation.

The whole is strongly controversial, marked by the animus of Mrs. Robinson's recent work against the Marshallian tradition of her upbringing. Her allegiance to the Keynesian Left continues more Keynesian than Keynes, to the extent that the master, rewriting today his last essay on the U.S. balance of payments (with a postscript "I told you so!") might well include a footnote on her forced paradoxes in his famous reference to "modern stuff gone silly and sour." The outspokenness of Mrs. Robinson's various positions, and her intolerance of opposition particularly from academic sources, leaves the pacifist reader longing for Yeats' "land of faery . . . Where nobody grows old and bitter of tongue."

Consider Mrs. Robinson's recurrent attack on Marshallian orthodoxy for assuming static conditions in a growing economy, and more explicitly for neglecting capital growth in its static theory of price and distribution. Here the decision could be hers on points, since static and stationary states are indeed confused in Marshall, had she only pointed out with care what difference it all makes (assuming the periodic net increment of capital to be but a minor component of the stock). It is the contention of most of us that most of the time Marshall's slip makes no difference whatever to Marshall's problems—surely no more than is involved for physics by assumptions about the perfect vacuum.

Mrs. Robinson thinks she has some analogy to relativity economics by the tail here, but her argument reduces to carping where it should go on to open Einsteinian horizons.

The same can be said of her attacks on the theory of capital, and on production theory generally, for abstracting from changes in capital value consequent upon changes in techniques, prices, and interest rates. Of course she is right. Capital theory in particular suffers from a hiatus at these points, concealed rather than resolved by quasi-index-number assumptions. It is accordingly easy to tear down the impressive structure erected on these shaky foundations. But Mrs. Robinson has little to replace it with, and more important, she again fails to show us what real difference our ambiguities make.

On technical change particularly, Solow has suggested in a path-breaking article (*Review of Economics and Statistics*, Aug. 1957) a way to disentangle its effects from those of movements along the production function, and thereby to apply the static production function to a dynamic society. It seems incumbent on Mrs. Robinson, writing three years later, to pay more attention to such work than offhand comments on "brilliance" that "dazzles more than it enlightens" (p. 132) or on the dependence of Solow's results upon a type of technical progress which, however special, may be the dominant one in practice.

M. BRONFENBRENNER

University of Minnesota

Theory of Value. An Axiomatic Analysis of Economic Equilibrium. By GERARD DEBREU. Cowles Foundation for Research in Economics, Monograph 17. New York: Wiley, 1959. Pp. ix, 114. \$4.75.

The main theme of this uniquely structured piece of work is competitive equilibrium in its static aspects. Of the seven chapters, Chapter 5 deals with the existence, Chapter 6 with the optimality properties, of such an equilibrium. Chapter 7 may be viewed as a sample of the technique of applying the abstract results to situations (here, uncertainty) not covered by the more narrow interpretations of the concept of a commodity. The conventional interpretations of the concept, including their possible differentiation as to time, place, etc., together with the corresponding price concepts, including interest rates, are provided in Chapter 2. Chapters 3 and 4 are devoted respectively to production and consumption, with complete concentration on those phenomena which are of direct relevance for the problems of the existence and optimality of the competitive equilibrium. Chapter 1 provides the mathematical background for the remainder of the book.

The interest of the economic theorist in the rigorous analysis of the competitive equilibrium, pioneered by Walras and Pareto, has had its ups and downs during recent decades. The 'thirties, although marked by focus on phenomena difficult to fit into the framework of the perfectly competitive model (monopolistic competition, involuntary unemployment), also witnessed a renewed interest in the logical structure of the classical model (if only for comparison with the Keynesian), and, quite independently, the first application (by

Abraham Wald) of rigorous modern mathematics to the problem of existence of the competitive equilibrium.

In the decade following the second world war the problem of existence was attacked afresh and the use of powerful mathematical techniques has led to results of impressive generality. Without undertaking the dangerous task of apportioning historical merit to the various outstanding contributors (among them McKenzie, Gale, Nikaido, and Uzawa) it is proper to note the crucial role played by the Arrow-Debreu paper (*Econometrica*, 1954) and a series of papers published by Debreu between 1951 and 1956. The existence theorem given by Debreu in the monograph [(1) in section 5.7, pp. 83-4] corresponds very closely to Theorem I of the 1954 Arrow-Debreu paper. Except for telegraphically compressed comments in the Notes (pp. 88-89), no attempt is made to present the most powerful results already available at the time the book was written. This is due to the author's stated policy of minimizing the cost of erecting the required axiomatic structure.

The chapter on optimality contains two results: on the optimality of the equilibria, and on the "reachability" (static) of optima through the competitive equilibria section (6.3, p. 94 and 6.4, p. 95 respectively); the formulation is very close to that of Debreu's 1954 paper on the subject which in turn is a lineal descendant of the basic paper by Arrow (1950), with the work of Lange, Koopmans, Allais and Debreu also in the background. Here again the results presented are not as general as those contained in the author's own earlier work.

This renunciation of generality, added to the monograph's other self-imposed limitations (e.g., exclusion of monopoly, dynamics, external [dis]economies, indivisibilities), points up the author's chief objective: the construction of a rigorous, self-contained axiomatic structure leading to certain basic propositions of economic theory.

In order to accomplish this, a sharp distinction is drawn throughout between parts of the formal structure and their interpretation. Thus, after seven and a half pages devoted to the discussion of commodities and prices (which, by the standards of this monograph, is an extreme in talkativeness), the following is a complete formal summary: "The number l of commodities is a positive integer. An action a of an agent is a point of R^l , the commodity space. A price system p is a point of R^l . The value of an action a relative to a price system p is the inner product $p.a$." And then the author adds: "All that precedes this statement is irrelevant for the logical development of the theory" (p. 35).

To attain the logical rigor, all of the economist's terms of discourse are systematically defined with the help of the mathematical vocabulary introduced in Chapter 1. Thus production is described in terms of certain subsets of a finite-dimensional Euclidean space (interpretation: feasible production sets, commodity space), consumption in terms of certain sets (interpretation: consumption possible aside from budget limitations) and binary relations (interpretation: preferences).

In turn, the mathematical vocabulary is introduced in a manner that uses

relatively few primitive terms (e.g., set) and (taking for granted the machinery of logic) defines other terms (e.g., cone) in terms of the earlier ones. One's first reaction may be that the author should have referred his readers to standard texts in mathematics, rather than resorted to such complete coverage. Actually, had he attempted this, he would not have saved many of the 24 pages devoted to the exposition of mathematics, given his determination to state explicitly every one of the notational and terminological conventions and all the mathematical theorems used in the remainder of the work. Thanks to this procedure we are not in doubt as to the notational distinction between the empty set and the origin; similarly, while the term "preordering" may seem strange or unnatural, its consistent use and the availability of a formal definition in Chapter 1 eliminates ambiguity from the assumptions on preferences in Chapter 4.

One should be clear, of course, that most of present-day mathematical economics work is done in a similar spirit of rigor and completeness, but Debreu's *Theory of Value* is unique in its uncompromising devotion to maintaining the clarity and rigor of the axiomatic structure even at the expense of other objectives. One detects the influence of the contemporary classic exposition of modern mathematics in the *Eléments de Mathématique* whose authorship is officially ascribed to the nonexistent Bourbaki. It may not be out of place, therefore, to point out that the existence of Gerard Debreu as a flesh and blood individual is firmly established, although without the benefit of the axiomatic method.

That Debreu should have succeeded in his methodological objective gives his book significance that transcends the particular competitive equilibrium theorems on which he has concentrated. But there is a heavy price to be paid for this success. As modern communication theory teaches, there is value in redundancy; its absence from the monograph (especially in proofs of theorems) makes for extremely difficult reading of crucial sections, and the occasional effort at motivating the proof (e.g., the last two paragraphs of Section 5.6) seems to presuppose a degree of insight that would make the explanations given almost superfluous.

While brevity of terms is a virtue, and the use of new terms minimizes the danger of confusion due to the reader's (possibly inaccurate) preconceptions, one feels that it would have been reasonably safe to mention that "equilibrium of the private ownership economy" (p. 79) corresponds to "competitive equilibrium" as used by most authors, or that "optimality" of Chapter 6 is the familiar "Pareto-optimality."

The didactic value of the monograph would have been increased immeasurably, had the author provided some examples in the crucial Chapters 5 and 6. It would have been nice to have a model in which, for instance, all the assumptions of the main existence theorem are satisfied and the equilibrium prices and quantities exhibited. But, more important, one's understanding of the problem would have been greatly deepened by examples lacking equilibrium due to the failure of one or another of the assumptions. If, as I hope, there is to be a second edition of this monograph (and I realize that this suggestion alone is enough to make an author into a mortal enemy), a pro-

vision of such examples would be a boon to those among us who do not merit Debreu's flattering estimate of our skill in "making up our own," and I feel certain that even Bourbaki would not disapprove.

Any feelings of unhappiness one may have with regard to the deliberate austerity and exclusions that characterize Debreu's *Theory of Value* are of minor significance as against the usefulness and beauty of the high-precision instrument it contains. It would not surprise me if it turned out to be one of the few classics produced in our period.

LEONID HURWICZ

University of Minnesota

Statistical Cost Analysis. By J. JOHNSTON. New York: McGraw-Hill Book Co., 1960. Pp. ix, 197. \$6.75.

This slim volume presents substantial contributions both to the theory and technique of statistical cost analysis and to the slowly growing body of empirical analyses of cost-output relations. The first three chapters present an excellent statement of the hypotheses underlying statistical cost analyses and the problems of statistical estimation encountered. After revealing the extent of the hazards, Johnston is indeed a courageous statistical investigator to proceed, undaunted, to the presentation in Chapter 4 of seven empirical studies which he has made. These studies are on the whole well done but present nothing that is startlingly new in methods or results. They use the same techniques and have the same weaknesses displayed by earlier studies. The fifth chapter summarizes earlier published studies. The summarization, while reasonably comprehensive, is with a few, apparently random exceptions, much too brief and too uncritical to be of much help. The final chapter appraises some of the major criticisms of the techniques of statistical cost analysis. Here the author makes some interesting contributions to the evaluation of the methods used. These contributions to our analytical techniques will themselves become the subject for further evaluation by statisticians and econometricians.

According to the editor's introduction, "The book is not intended as a text; its purpose is to serve as a reference work for courses in economic theory, theory of the firm, business economics and business administration, operations research, and accounting." The first three chapters are admirably suited to this purpose and should find wide usage in a variety of courses. The studies in Chapter 4 are good examples of empirical studies but they are not presented, and do not seem to have been selected, for their coverage of different theoretical situations. They are, rather, studies based on data which the author was able to obtain. If the purpose in presenting the studies was to give general students a comprehensive picture of what cost-output studies have shown, published or unpublished studies by researchers other than the author should have been presented in detail. The summaries in Chapter 5 are much too brief to serve this purpose. The bulk of the book (Chs. 4-6) is more a contribution to the monographic literature on the subject than a reference work for students in general courses in economics and business administration.

The level of mathematical sophistication demanded of the reader varies greatly and sometimes abruptly. Chapters 1 and 2, with the exception of a passage on pages 8-9 which might well have been relegated to a footnote, require only the minimal grasp of functional relationship which serious students of economics might be assumed to have. The last half of Chapter 3 and occasional passages in Chapter 4 are a bit more demanding. Much of Chapter 6, on the other hand, demands a degree of mathematical competence beyond many if not most graduate students in economics and *a fortiori*, those in business administration.

This review is not the place for a detailed critique of Johnston's own empirical studies presented in Chapter 4. They are generally of high quality and merit detailed discussion. Unfortunately they have their quota of flaws. Two of the more serious are, first, the failure to analyze or even to note the anomalous results of the regression analyses on firms 14 and 39 in the study of electricity generation in Section 4-1. Here, one regression shows negative marginal cost for almost one third, the other for well over a half of the observed range of output variation. Second, in the study of road passenger transport in Section 4-2 he corrects fuel costs by an index of the ratio of miles per gallon to price per gallon of fuel. "The resultant deflated fuel costs display a strong linear relationship with car miles" [p. 80 and Fig. 4-13(b)]. They should, since because of the method used, "deflated fuel costs" are really an index of car miles! The effect of this slip on the study is not too serious since this just removes one possible cause of average cost variation. Unfortunately, however, the validity of the cost-output relation found for road passenger transport must be questioned because output variations are highly seasonal and there are reasons other than low output which might well make unit costs high in the winter. The substantial variations in cost with little or no variation in output revealed in Fig. 4-14 re-enforce this *caveat*.

Without ever quite saying it Johnston gives the impression that he concludes, on the basis of his own studies and his review of the studies made by others, that "constant, short-run marginal cost and an L-shaped long run cost curve" are the rule (p. 193; see also pp. 168 and 170). The reviewer's conclusions are somewhat different. With respect to the long-run cost function he would still emphasize as he did earlier¹ that increasing factor costs and increasing distribution costs seem in practice to curtail plant expansion before the minimum cost size under *ceteris paribus* assumptions is reached.

The reviewer would disagree more strenuously with a conclusion that short-run marginal cost is constant. The empirical evidence suggests that outside agriculture and especially in manufacturing marginal cost generally rises little until "capacity" is reached. What little evidence we have suggests that at this point it rises sharply² while the logic of the situation suggests that we will seldom get observations of output beyond capacity.

¹ In *Business Concentration and Price Policy*, National Bureau of Economic Research, Princeton 1955, pp. 229-30.

² See, for example, two cases noted in *Cost Behavior and Price Policy*, National Bureau of Economic Research, New York 1943, pp. 100-101.

The most fundamental criticism I would make of the book is that the analytical technique used by Johnston and by most other investigators contains what I conceive to be a misuse of the tests of statistical significance. He sets up the tests to throw the burden of proof onto the hypothesis which according to generally accepted economic theory has the greater a priori likelihood. The tests used ask the question: Is there statistically significant evidence that the marginal cost function is U-shaped? The question should be: Is there statistically significant evidence that the marginal cost function is not U-shaped?

Johnston frequently fitted cubic total cost functions to the data. He then says, for instance on page 58, "the inclusion of the terms in . . . X^2 or X^3 did not add significantly to the percentage of explained variability, so that the linear equation is taken as our estimate. . . ." The statistical tests show that the probability that the curvilinearity was imparted by random variations was greater than 5 per cent. He assumes that the *mathematically* simpler explanation is to be preferred a priori; therefore he rejects the curvilinear regression which is to be preferred a priori on economic grounds.

An a priori preference for the mathematically simpler hypothesis has generally proved to be a good rule in the natural sciences, but this is no reason for a presumption in its favor in economics. As early as 1838, Cournot noted that the functions describing economic reality do not seem to display the mathematical simplicity of the great laws of physics.

If one holds that generally accepted economic theory provides valid a priori grounds for preferring a cubic total cost function the relevant test would seem to be: Are the chances greater than 95 per cent that the curvilinearity arises because of random variations. This test would reject X^2 and X^3 terms only in rare instances. On the other hand, it might not infrequently yield a conclusion that would be even more embarrassing to the orthodox theory upon which its presumption is based. The cubic total cost function might yield an inverted-U marginal cost curve, that is, marginal cost rises slowly to a peak as output increases and then falls.

The greatest scholarly contributions and the most controversial material in the book are in Chapter 6, "A Critique of the Critics," and in Section 4.7. Johnston's criticisms are not always entirely fair to the earlier critics but they display power and ingenuity. The critique is a trenchant attack on criticisms made by those of us who have challenged the validity and/or the relevance of cost-output studies showing constant short-run marginal cost and declining long-run average cost up to maximum size of plant.

Johnston's criticisms demand detailed review which is impossible here. He states and limits his conclusions carefully; there is serious danger, however, that all but the most careful readers will infer greater generality than seems to me warranted.

CALEB A. SMITH

Brown University

Bargaining and Group Decision Making: Experiments in Bilateral Monopoly.

By SIDNEY SIEGEL and LAWRENCE E. FOURAKER. New York: McGraw-Hill Book Co., 1960. Pp. x, 132. \$4.90.

"Among all the behavioral sciences, economics is clearly the leader in the development of sophisticated and rigorous theory. The development of economic theory has far outstripped the development of empirical means for disposing of alternative hypotheses derived from theory.

"On the other hand, of all the behavioral sciences, psychology has given the greatest attention to the development of rigorous experimental methodology." (Pp. 71-72.)

The time is ripe, the authors of this book suggest, for an interdisciplinary union of these distinctive skills; and this product of their own collaboration (Professor Siegel is an experimental social psychologist) gives very persuasive support to their argument. Even those who have little direct interest in bargaining theory will find this pioneer work well worth their time, as an introduction to the methods and the considerable promise of "experimental economics."

Bargaining theory is a particularly suitable area for this joint approach. Most hypotheses in this field require, for their confirmation or rejection, a sort of data which nonexperimental observation in the economic sphere simply has not provided. Diplomats in negotiation are forced to commit to writing, day by day, their current evaluations, fears, uncertainties, goals and proposed tactics, for the cable or diplomatic pouch; and occasionally this record is exposed to the public, providing relatively usable data for the bargaining theorist, who is interested not only in what the decision-makers did but in why they thought they were doing it, and what they saw as their alternatives. Unfortunately, General Electric does not publish a "White Paper" or a "Yellow Book" when negotiations with unions, suppliers or purchasers break down. Though antitrust litigations, like war crimes trials, do furnish some tantalizing documentation on the bargaining process, an adequate trail of paper just does not exist; nor do union negotiators, like ambassadors, publish memoirs recounting the exact sequence of demands and expectations in a critical session.

Most bargaining theories refer to such variables as the information available to each bargainer, his "level of aspiration" (roughly, utility payoffs), his expectations; yet in the data usually available on economic transactions, the associated states of these variables cannot even be discovered, let alone controlled. A result has been some lack of interest in bargaining theory, which has offered for various problems whole sets of plausible but contradictory "solutions," with no evident hopes of choosing among them empirically. An experimental approach, offering means of measuring and manipulating these variables under controlled conditions, may make many old propositions operational at last, and some of them useful. Even more important (an advantage the authors might have stressed) may be the heuristic value of this approach, in suggesting new hypotheses and new dimensions to the bargaining problem.

In the hands of these authors, the method shows not only promise but results. Their data indicate strongly that bargainers under simulated bilateral monopoly conditions tend to negotiate contracts at that quantity which maximizes the joint payoff, and that dispersion around that amount can be reduced by increasing the amount of information possessed by the bargainers; moreover, the division of this joint payoff proves closely related to relative levels of aspiration and information. A reader who examines the experimental conditions, including the precise information given the subjects (particularly in the "incomplete information" case), will find the actual results for these and other cases more impressive than may appear here.

The experimental design seems careful and imaginative; in general, the skills of the experimenter show off to somewhat better effect than those of the theorist in this work. The abstract "bargaining model" proposed reveals too many measurement problems, at this stage of investigation, to rise much above tautology. A major limitation on the results is that restrictions on communication (quite justifiable in these early experiments) rule out many forms of *threat* behavior, including "commitment"; this is probably a main reason (one the authors fail to suggest) for the fact that only one pair of subjects failed to reach a contract, and it may have influenced the pattern of contracts significantly.

The concept of level of aspiration, borrowed from psychology, may prove a most fruitful addition to economic theorizing in this area; it can lead to testable and interesting hypotheses on the structure of utility payoffs in a particular situation (where only objective outcomes are known directly), on *changes* in that structure which may occur during and as a direct result of the bargaining process, and on a possible dependence of the utility function upon expectations.

DANIEL ELLSBERG

The RAND Corporation

Wirtschaftsprognose und Wirtschaftsgestaltung. Edited by HANS BAYER. Berlin: Duncker & Humblot, 1960. Pp. 318. DM 32.

This is a collection of papers read at the international conference which took place at the Social Academy in Dortmund during 1959. Papers are followed by a verbatim report of the discussion. The title of the book refers to two main themes of the conference: *Prognose* and *Gestaltung*. *Prognose* is equivalent to forecasting not only numerical magnitudes but also structural changes; *Gestaltung* is a mixture of decision-making and its implementation, planning, and shaping of economic relations (economic order). The interdependence of decision-making and forecasting is intended as the unifying element of the book.

Hans Bayer, the director of the Academy and the editor of the book, sets the tone by stating in his introductory paper that forecasting is worthwhile only when its results can be used to influence the market: hence a small firm which cannot make its impact felt has no use for forecasting. Powerful firms,

government (central or local) can afford both to pay for forecasting and to use its findings in order to shape the market. Bayer seems to be unaware of the advantages a small firm can derive from the forecasts of ups and downs of the economy as a whole, even if they do not affect the relative position of the firm in industry.

The use of forecasting by various economic decision-makers is not made any clearer by Bayer's insistence on the basic conflict between private firms and the interests of the economy as a whole. Lack of countercyclical policy and profit maximization, which according to Bayer are characteristic of private firms, are completely opposed to welfare maximization and the policy of maintaining full employment—two main aims of the whole economy. This thought, under various guises, reappears in the book time and again. Thus a Swedish cooperativist, Ohde, thinks that cooperatives are on the side of social planning, i.e., of Keynes and Beveridge who wanted to give greater security and defended those economically weak (this is Ohde's summary of Keynes' and Beveridge's views). Private enterprise is considered unable to give the greatest possible satisfaction to the great part of the population. Such statements are not followed by attempts to prove them. Only Mey of Amsterdam is an exception. He tries to show that only public and communal enterprises satisfy maximum needs of the public while just covering their costs. Maximizing profits cannot lead to the same result, he claims, because firms wish to earn profits besides covering their costs. Mey's proof seems to depend on the tacit assumption of constant variable costs per unit while the proportion of fixed and variable factors is changing, that is on the rejection of diminishing marginal returns.

The tendency to question the usefulness of private enterprise and profit motivation leads to hints of a necessary reconstruction of the social order. Positive suggestions are not abounding. The participants are clearly dissatisfied with too much stress on profit-making and are frightened by the prospects of the fully planned economy, as known in East Germany. They like to refer to an economic order based on cooperation of private firms within trade associations and in contact with public bodies.

The meeting was more successful in the way in which it dealt with rationality and uncertainty in decision-making. Papers by Potthoff and Koch indicate that business planning need not be rigid; on the contrary, it must take into consideration stochastic elements in the economy. The participants welcomed the prospect of a marriage between planning and the determination of goals of economic activity on one side, and the freedom of the participants in the economic process on the other. In the course of the discussion it was made clear that there is a room for uncertainty in the decisions at various levels: operations research, planning by business, governmental decisions.

Battara from Rome supplies an article on the use of governmental intervention based on modern macroeconomic theory. De Wolff presents the practical problem of economic planning, persuasion, and cooperation of various

social groups in the Netherlands. Tinbergen adds a few interesting remarks on forecasting in underdeveloped countries.

The book is likely to be of little interest to U.S. economists except for students of the development of economic thinking in Germany.

STANISLAW WASOWSKI

Georgetown University

The Critics of Keynesian Economics. Edited by HENRY HAZLITT. Princeton: D. Van Nostrand Co., 1960. Pp. viii, 427. \$7.00.

Having failed to breach the Keynesian citadel with his solo attack in *The Failure of the New Economics*, Henry Hazlitt has brought up some heavy artillery in an effort to demolish the *General Theory*. From the voluminous anti-Keynesian literature read in preparing his previous volume, Hazlitt has chosen 19 reviews, articles and miscellaneous selections published between 1936 and 1958, plus selections on the "law of markets" from J. B. Say and J. S. Mill thrown in as background—accessories before the fact so to speak. Included are well-known papers by Jacob Viner (1936), Frank Knight (1937), Franco Modigliani (1944), John H. Williams (1948), and Arthur F. Burns (1954); others are by Hayek, Mises, Röpke, McCord Wright, B. M. Anderson, W. H. Hutt, Jacques Rueff, and Albert Hahn; and the light artillerymen are economic writers Philip Courtney, Gordon Wasson, Garett Garrett, J. S. Lawrence, and M. Palyi. Meriting special mention is Étienne Mantoux's 28-page review (1937), which appears for the first time in English translation.

In Hazlitt's 10-page general introduction no language is too scathing for Keynesian economics, which is denounced as "one of the intellectual scandals of our time." Hazlitt says ". . . all Keynes's recommendations for practical policy are unsound," and: "What is original in the book [*General Theory*] is not true; and what is true is not original." He even denies Keynes the originality of his errors.

Since everyone knows what Hazlitt stands for and what Keynes stood for, let us take a fresh look at the gulf which separates their thinking. Clearly their differences on economic theory stem from different views concerning the nature and behavior of the capitalist system. Capitalism requires cooperation between free workers who do not possess the nonpersonal means of production for self-employment and the so-called capitalists who own or control the nonpersonal means of production. This cooperation takes the form of a wage bargain in which workers offer their labor services to capitalists, and capitalists in turn agree to pay the workers for putting the means of production into operation. Now if some workers remain unemployed and some means of production remain idle, the question arises whether the fault lies with the wage-earners for withholding their labor or with the capitalists for withholding the means of production. Hazlitt and those who think as he does will not concede that unemployment can be a fault of capitalism per se. They blame imperfections in the market, especially rigidities of wages and prices.

Keynes, on the contrary, maintains that employers withhold the means of production from workers. He calls his analysis of the withholding process the theory of a monetary economy, by which he means that the essential properties of money and interest result in unemployment (*General Theory*, p. 235). In the absence of money, or of any other asset with the properties of money, equilibrium would be reached only at full employment. The most essential characteristic of money is its high liquidity premium, which results because money is the socially recognized form of private wealth. Under the system of production on private account, employers will give workers access to the means of production only if they anticipate that the state of effective demand will result in the conversion of real goods into money on favorable terms. Money in this sense represents, stands for, private property in general. The marginal efficiency of holding money (the rate of interest) will fall more slowly than the marginal efficiency of particular kinds of wealth (the rates of return on real capital assets).

Keynes' fundamental theoretical proposition is that there can be an equilibrium at less than full employment, whereas Hazlitt says that the idea of an equilibrium at less than full employment "is a contradiction in terms" (p. 5). Both are correct! There can be equilibrium at less than full employment within the framework of Keynes' theory of a monetary economy, and there cannot be equilibrium at less than full employment within the framework of Hazlitt's "classical" economics. This conclusion, however, is not very helpful. Equilibrium and disequilibrium have nothing directly to do with the facts of experience and offer no guide to action. In the non-Euclidian (nonclassical) world of Keynesian monetary economics the maxims of the Euclidian (classical) world of real-exchange economics are quite irrelevant. Moreover, rigidity of wages and prices is not fundamental in the Keynesian system of equilibrium because the characteristics of wages and prices are derivative from the properties of money.

Whether a situation of large unemployment is described as one of equilibrium or disequilibrium is not important. The issue of unemployment can be joined only by discovering the operational meanings of these two systems and by testing the workability of the respective remedies. Theory and practice are systematically linked in the thought of both Keynes and Hazlitt, which is more than can be said of economists like Pigou and Patinkin, who seem to accept Keynesian remedies while rejecting Keynesian theory. As is well known to every reader of the weekly press, Hazlitt attributes economic evil—be it unemployment, inflation, gold outflows, or what not—to the behavior of trade unions and to New Dealish labor legislation. Presumably he believes a state of bliss would come to pass if trade unions were broken and labor legislation repealed. This is a testable hypothesis, but not one likely to be tested. The political temper of modern democratic societies renders Hazlitt's position unrealistic in the sense that it calls for a more or less complete return to the never-never land of nineteenth-century *laissez faire*. Henry Hazlitt reminds one of the Japanese soldier who was found on an isolated Pacific isle a decade or more after the end of the second world war, unwilling to accept the fact that the war was long since over, and lost. Courage and perseverance in the face of

opposition are qualities not to be taken lightly, but there is also merit in knowing that the war is over and in what century one is living.

DUDLEY DILLARD

University of Maryland

Industrial Pricing Policies: An Analysis of Pricing Policies of Danish Manufacturers. By B. Fog. Amsterdam: North-Holland Publishing Co., 1960. Pp. viii, 229. \$4.75.

This is a welcome translation of the 1958 original, which reports an investigation made in 1951-55. The following remarks seek to supplement rather than duplicate the perceptive review of the Danish edition by Goran Ohlin (this *Review*, March 1959, pp. 165-67) and to relate the book to some very recent work in the field.

Professor Fog's study is mainly a comparison of marginal and full-cost pricing in Danish manufacturing of footwear; radio and television; and paint, dyestuffs, and varnish. Because the connection between full-cost pricing and oligopoly is crucial, we regret that to preserve anonymity he had to omit a case study of an industry "with very few members." Actually, the author studied 139 firms in more than 18 branches of industry and used much supplementary material as well (some from America). An apparent innocence of modern survey sampling methods reduces the value of the data for generalization, but, on the other hand, the care and skill with which he conducted his interviews greatly enhances it. In particular, he was not misled by differences between business and economic terminology. If his cases are less reliable than full-dress industry studies would be, they are nevertheless far superior to studies based on mere questionnaires, oral or written.

Full-cost formulas come in many variants, and the most interesting part of the book is a fascinating collection of examples of how they are in practice modified to take account of market conditions (Ch. 5 and 6). No student will want to miss these. Fog concludes that full-cost pricing is common as business *procedure*, yet marginalism often adequately describes the *results* of business decisions. Thus although he greatly enlarges the evidence, his results are like those in Heflebower's 1952 review paper (published in *Business Concentration and Price Policy*, 1955). This inspires confidence in both works, though it diminishes the novelty of the later one.

While this reconciliation of the two pricing approaches was occurring, there has been re-examination of the central concept, profit maximization. Most economists now reject, as too restrictive, maximization of profits by means of objectively-known, short-run marginal revenue and cost functions. But when the principle is broadened, it sometimes tends to become vague or tautologous. Probably this is why a number of recent studies¹ propose other, presumably more definite, goals of business behavior as bases for prediction: goals which also are said to be more "realistic." Wiles, asserting "it is purely a matter of

¹ Here we examine: P. J. D. Wiles, *Price, Cost and Output* (Oxford, 1956), Ch. 5; W. J. Baumol, *Business Behavior, Value and Growth* (New York, 1959), Pt. I; and R. F. Lanzillotti, "Pricing Objectives in Large Companies," this *Review*, Dec. 1958, 48, 921-40, and discussion, Sept. 1959, 49, 669-87.

ethics" (*op. cit.*, p. 44), claims that full cost chargers do not price to maximize profits, and "probably most of them produce more, not less, than the most profitable output" (p. 278). This approaches Baumol's constrained sales maximization hypothesis (which, perhaps, is really an attempt to insert dynamic considerations—expanding demand—into a static model). Lanzillotti's idea was to identify specific business objectives consistent with long-run profit maximization but more operationally feasible for short-run behavior and its prediction.

Naturally, the evidence these writers and Fog observed may not be comparable. Wiles' is unspecified; Fog had relatively few conversations with sales managers, contrary (one supposes) to Baumol; and the Danish firms were not Brookings' giants. As it happens, some of Fog's material will support each of the proposed hypotheses—and others, too. (Lanzillotti's "target return on investment," however, is notably absent except when embodied in full-cost formulas, and we saw how flexible these usually are.) Yet when it comes to attempting a generalization, the principle which requires the fewest exceptions still seems to remain long-run profit maximization.

HOWARD H. HINES

Iowa State University (Ames)

A History of Economic Thought. By OVERTON H. TAYLOR. New York: McGraw-Hill Book Co., 1960. Pp. xix, 524. \$7.75.

The *close*, but not always fully realized (or if realized, as it was, if I am not mistaken, by Smith, and even more certainly, I think, by Veblen, although he is always difficult to categorize, then not articulated) interdependence of, and reciprocal set of influences or "effects" upon one another, of the philosophical (including ethical) system of an economist and—where this can be distinguished, if it ever can—his "technical" economic theory—to say nothing of the policy positions (attitudes) which were, and could be, but sometimes were absent-mindedly not, associated therewith—is one of the main themes—or, to speak succinctly if only approximately, one of the main beliefs—that pervades and instructs this textbook-treatise of Dr. Taylor.

If the reader can wade through 508 pages of this style of writing with sustained comprehension, which I suspect will put him in a select group, he will be rewarded by some interesting as well as some not-so-interesting pieces of this philosophical background. He will also find a presentation of the main theoretical positions of the classical economists which is on the whole quite perceptive.

Taylor's work runs from the Physiocrats to Keynes, but aside from the first-named school, and Marx, only the most famous English economists are more than mentioned. (The chapter on Marx is hardly an exception so far as the casual treatment of his economics is concerned.) In general Taylor gives little attention to technical economics after 1850, and his selection and discussion are highly personal. Thus the marginal utility theorists are merely named (incorrectly, p. 323), mathematical economics is criticized rather than presented, and the Austrians are ignored. In fact only three economists after

Mill are treated in sufficient detail to be comprehensible: Marshall, Chamberlin, and Keynes. The treatment of their economics is not graceful.

The volume, in fact, should not be viewed as an orthodox history of economics. Instead it is a traditional liberal's running commentary, of all degrees of perspicacity, on the philosophical, political, and economic problems of modern times, hung on the framework of a chronological conspectus of economic theory.

GEORGE J. STIGLER

University of Chicago

Economic Doctrines of Knut Wicksell. By CARL G. UHR. Berkeley: University of California Press, 1960. Pp. xv, 356. \$7.50.

This is the first treatise that deals systematically with all the works of Knut Wicksell. The analysis shows careful research and scholarship on the part of the author and establishes Wicksell firmly in the first rank of economic theorists. Wicksell's own doctrines and his influence on his contemporaries and successors is carefully developed. This volume reveals his contributions to other areas of theoretical analysis as well as monetary theory. The reader will be impressed with the extent to which Wicksell anticipated many of the more recent theories.

The first chapter sketches Wicksell's life, which reveals many frustrations as well as achievements. He was an indefatigable social reformer who influenced many phases of social and economic development in Sweden. His firm views frequently put him at odds with established practices and in sharp disagreement with some of his contemporaries.

The author uses a synopsis of Wicksell's contributions to economics as a focus for separate discussions of the various aspects of his work to which subsequent chapters are devoted. He presents the background of economic theory as Wicksell found it and then the impact of his labors on contemporary economic thought. This plan is most useful in establishing the broad range of Wicksell's contributions and in emphasizing the point that his analysis embraced much more than monetary theory.

When Wicksell began his studies, about 1885, marginal utility and marginal productivity analysis had supplanted much of classical tradition. After 1890 the Marshallian synthesis dominated value analysis; but there were less systematized branches of economics—monetary theory, business cycles and public finance—which needed to be re-examined. Wicksell made significant contributions to these more specialized subjects and also to economic theory.

Wicksell was one of the founders of the marginal productivity analysis. As a part of his static analysis, he developed and analyzed price theory under imperfect competition in a way which comes close to the modern theory of monopolistic competition.

His most important contribution to static economics was the revision and reconstruction of Böhm-Bawerk's capital theory. His work on capital theory dealt primarily with the process of capital formation. He made the impact of capital accumulation on the national dividend and on the relations between

distributive shares more readily analyzed than when the Austrian concept was used. Economists were concerned that capital might increase at a rapid rate and interest rates might reach zero. A stationary economy would follow. He observed, however, that some of the net real saving would be absorbed in rising real wages and rent during an interval of capital formation, and this appeared to be a guarantee against a zero rate of interest: partial wage-absorption of savings could be counted upon to prevent the creation of the large amount of real capital that would be required to drive the marginal productivity of capital to zero.

On the subject of taxation and public finance he was primarily concerned with the theory of shifting and incidence of certain taxes and with a revenue system that would provide "justice" in taxation. Wicksell advocated greater reliance on direct taxes than on indirect taxes not only for revenue purposes but for achieving justice in taxation. He emphasized revenue aspects and neglected to consider the uses to which the revenues would be put. His contributions in this area are not as significant as other parts of his work.

The monetary analyses are found in Chapters 10, *Theory of General Prices, Money and Credit*, and in 11, *Later Developments of Wicksell's Monetary Doctrine*. The chapters present versions of Wicksell's own analysis and in addition, the views of contemporaries.

The volume is a distinct contribution to economic knowledge. This is an excellent study of Wicksell's contributions and those of many others who in some way share in the Wicksellian tradition.

J. F. BELL

University of Illinois

Emergence and Content of Modern Economic Analysis. By WILLIAM FELLNER. New York: McGraw-Hill Book Co., 1960. Pp. xiv, 459. \$7.50.

Professor Fellner has written an excellent book which not only makes a contribution to economic analysis but should heighten student interest in economic theory as well. He provides an exciting introduction to modern micro- and macroeconomic theory by tracing the antecedents of contemporary economic analysis, skillfully using the evolution in techniques of analysis to increase the reader's interest in learning how today's theory now views the basic economic problems.

Following a section on methodology in which he distinguishes between deductive and inductive analysis, Fellner explores the contributions of the Mercantilists, the Physiocrats, the Classical School, and the Marxists to the development of contemporary economic analysis. The economic reasoning of each of these schools is either contrasted directly with current views on the same economic issues or is shown to have dealt inadequately with various aspects of the fundamental economic problems. In Part III, after showing how the neoclassical economists altered the classical theory, Fellner presents a rigorous discussion and analysis of modern price theory. Among the topics included are the theory of rational consumer choice, indifference curves and the measurability problem, the pricing of output, market structures, functional

income distribution, and an appendix on cost curves and the elementary programming problem. In this microeconomics section, Fellner gives a lucid statement of the difficulties encountered in the ordinal and cardinal measurement of utility. He also acknowledges the practical significance of break-even pricing by developing modern price theory in this framework before turning to the more conventional treatment of the price-determination process.

In Part IV, Fellner restates in an improved form most of the important analysis and conclusions of his earlier book, *Trends and Cycles in Economic Activity*, New York, 1956. Modern macroeconomic static and dynamic theory are carefully developed. Fellner shows how output is determined on non-Sayian assumptions, how the public sector of the economy affects the level of output, and how dynamic factors can be introduced into the output model. The final chapters of Part IV interpret the various measurements of cyclical disturbances and the empirical data on the cyclical and growth experience since early in the 19th century.

Finally, in Part V, Fellner presents a stimulating discussion of the problems of policy in the major critical areas of the economy: competition and monopoly; full-employment and inflationary pressures; redistribution of income; and international economic issues. He does not hesitate to give his own appraisal of the probable consequences of the various policies, while generally indicating where economic facts end and where value judgments begin.

The book as a whole is an impressive synthesis of historical economic thought and modern economic theory. There are, however, some problems in its use. Thus his development of economic ideas will have added meaning if the reader has already been rather thoroughly exposed to the basic concepts of economic analysis in a good first course in economic theory. In fact, many sections of the book will provide valuable insight for graduate students who will appreciate the clear perspective Fellner brings to the major economic issues. As a further point of criticism, several of the topics in contemporary economic theory would benefit from a more extended treatment. Thus, for example, additional analysis would be helpful in his discussion of the general requirements for the direction of "technological-organizational progress" if sustained economic growth is to occur. He first emphasizes the importance to growth of maintaining adequate returns to investors without at the same time worsening the relative income position of workers. He then argues persuasively that "a decline in the output per unit of existing capital is compatible with an unchanging yield of investment to investors *only* if the relative distribution of income is changing at the same time in favor of the investors" (pp. 318-19). A full understanding and acceptance of this reasoning, however, requires a technical discussion of the elasticities of the average productivity functions along the lines that he has already developed in his *Trends and Cycles in Economic Activity*. A minor criticism of this same sort can be directed toward his interesting attempt to simplify the linear programming problem. More detailed analysis would seem to be necessary if this section is to be used by undergraduates.

I urge undergraduate teachers of economic theory to try Fellner's evolu-

tionary approach to the understanding and appreciation of economic analysis; graduate students, too, will profit by careful study of his book.

KENNETH D. ROOSE

Oberlin College

Aggregate Economics and Public Policy. By BARRY N. SIEGEL. Homewood, Ill.: Richard D. Irwin, Inc., 1960. Pp. xiii, 337. \$6.50.

An eminent economist once remarked that the best academic minds in a field do not, or should not, devote time to the writing of textbooks. This is a controversial statement, especially so in dynamic, growing fields. It is no small art to keep up with the significant monographic literature, integrate it, and produce a new summary of the current body of doctrine. To do this well is a service of value to colleagues as well as to students.

It is this service which Barry N. Siegel has attempted in the field of aggregate economics. In the quarter-century since Keynes' *General Theory*, macro-economic theory has been in a state of continual ferment. Only recently have a number of textbooks appeared attempting to consolidate the present state of knowledge in the field, and provide the foundation for intermediate or advanced courses coordinate with the traditional course in value theory. Siegel's book represents one of the more successful efforts in this direction.

The book may be described as falling into 6 main parts. The first 3 chapters develop the concepts and structure of the national income and product accounts, concluding with a description of the U.S. system. In the next 4 chapters Siegel introduces the simple Keynesian expenditure model (contrasted to the classical approach) and then elaborates the model to include governmental activities and international economic relationships. In this part, the variables are treated formally and labeled exogenous or endogenous without detailed investigation of the flows themselves, in order to bring out the structural interrelationships.

In the third section the author backtracks and discusses the theory of consumption (Ch. 8 and 9) and of investment (Ch. 10 and 11), layering the results of recent research findings and theories on top of the original Keynesian analysis. In Chapter 12, the theory of the interest rate is brought in, and the theory of aggregate demand is re-expressed in terms of the LM and IS curve approach of Hicks and Hansen. The complications of the government and rest-of-world sectors, brought into the algebraic model of Chapter 7, are largely absent from the exposition of Chapter 12.

The next 3 chapters, which comprise a fifth part of the book, are devoted to the themes of the aggregate supply function, changes in the general price level (mainly inflation), and economic growth in line with the Harrod-Domar offshoot from Keynes. The final section comprising Chapters 16, 17, and 18, sets out the chief problems of the U.S. economy, and discusses the public policies appropriate to achieve the goals of optimum growth and relative stability of employment and prices.

A number of meritorious features of the book should be mentioned. The national accounting structure is logically developed, and the importance of industry value added as an approach to total national product (coordinate

with gross national income and final expenditure) is clearly recognized. The expanded, algebraic expenditure model of income determination is a great improvement over the simple two-sector Keynesian model. The exposition of the aggregate supply function, including the notion of the "efficiency wage" (unit labor cost) which rises sharply as capacity is approached, but is irreversible, is helpful in explaining price behavior. In addition, the recent literature, including the Joint Economic Committee hearings and study papers, is brought to bear on the discussion of demand-pull, cost-push, and demand-shift varieties of inflation. The policy section is compact, and neatly handled.

As is probably inevitable in a work of this scope, there is the usual number of questionable or even incorrect statements. For example, "When the economy slumps, business saving tends to level at the minimum provided by depreciation charges . . ." (p. 172); "Decreases in investment spending often occur before a general slump has occurred, and increases, similarly, often develop prior to recovery" (p. 204); "The higher the ratio of retained earnings to dividends paid to stockholders, the lower, other things equal, becomes the value of the stock" (p. 195).

In his discussion of income determination, Siegel on occasion neglects to distinguish clearly between condition of equality and of equilibrium. One wonders how meaningful is the distinction between induced and autonomous investment when the latter is defined merely as "not a function of income growth." Also, one is puzzled by the suggestion that autonomous investment may be irregular because of the lag between inventions and their applications, although it is not argued that the lag is variable in length. Likewise, the treatment of technological unemployment is somewhat unsatisfactory.

If a new edition eventuates, Siegel might well consider adding a section on business cycle analysis which is hard to divorce from the theory of growth in a general macroeconomic text. The volume might also be improved as a textbook if the theory were supplemented to a greater extent by references to economic statistics and empirical studies.

As it stands, the book met a favorable response in the class of 20 in which this reviewer used it as the text in a macroeconomic theory course last fall. Asked to grade *Aggregate Economics and Public Policy*, about half the students rated it "A," and the rest "B." I would not quarrel with their composite judgment.

JOHN W. KENDRICK

The George Washington University

Economic History; Economic Development; National Economies

Methods of Regional Analysis: An Introduction to Regional Science. By WALTER ISARD AND ASSOCIATES. New York: The Technology Press of the Massachusetts Institute of Technology and John Wiley & Sons, Inc., 1960. Pp. xxix, 784. \$9.50.

There is ample evidence that Walter Isard provides an important intellectual center to which those who find problems of the spatial distribution of phenomena interesting and important must frequently turn if they are to

remain acquainted with major developments in their field. Inasmuch as the volume here under review is a systematic summary of analysis, of techniques, and of empirical research which relates to the spatial (regional) distribution of (largely economic) phenomena, inasmuch as it evaluates results to date and makes major recommendations for improvement, and inasmuch as it suggests future research likely to prove useful, it is an important work. It deserves a prominent place on the shelves of every person seriously and technically interested in problems relating to the location of activity.

Approximately two-thirds of this large book is devoted to a summary and critical evaluation of techniques developed for use by regional analysts. It deals with (1) techniques for projecting the size and composition of population and the migration thereof, (2) systems of regional social accounting, (3) commodity and money-flow studies, (4) regional cyclical and multiplier analyses, (5) industrial location analysis techniques and descriptive measures, (6) interregional and regional input-output techniques, (7) industrial complex analyses, (8) interregional linear programming, and (9) gravity models. Summary and evaluation alike exhibit both a scholarly interest in the history of the development of economic ideas and an impressive grasp of technical detail. The trained reader will find that this portion of the book provides a convenient source for bringing himself up-to-date on important developments he might otherwise have missed. Or, he may well be confronted by a bit of analysis or criticism which will disclose weaknesses in, and hence improve, his own work. It is doubtful, however, that a student approaching the material for the first time would be so well served. For his use, there may well be too much talk *about* analysis and technique and too little *systematic presentation* thereof.

The remaining one-third of the book (1) imaginatively suggests procedures for synthesizing, or integrating, the individual techniques previously described to allow a unified picture of a region and its interrelations with other regions, and (2) outlines desired future research. The suggested synthesis, or integration, essentially suggest an interregional input-output matrix to work out the detailed consequences of regional specialization in "basic" industries as explained by comparative cost, industrial complex, or linear programming analyses, these detailed consequences being reported by carefully contrived accounts, flows, coefficients of location, etc. But this brief statement does violence to the wealth of detailed suggestions covering almost 200 closely packed pages well worth attention.

Numerous footnotes direct the reader usefully to the literature. A detailed list of references following each chapter provides still another valuable feature. Indeed, the footnotes and references together provide such a convenient guide to a growing literature that they are themselves worth the price of the book.

The very excellence of this book, however, may well lead the reader to certain observations of the field which it covers. First, there seems to be no compelling social problem that dominates the field and focuses attention, analysis, and research in the sense in which the "monopoly" problem has focused micro analysis generally, or in the sense in which a concern with "stability" has focused macro analysis. As a result, much of the dispute and discussion sur-

rounding the choice and efficiency of alternate techniques turns out simply to be based on a failure to clearly specify differences in implied purposes.

Second, because there is no compelling, unifying problem, there tends to be a preoccupation with the two extremes: (1) the development of abstract techniques well beyond the current capacity of data sources to allow empirical study, or (2) detailed but diverse small-area or sector studies which do not yield generalized conclusions.

Third, there does not emerge from this book, nor from the body of work upon which it reports, a view of change in the actual distribution of phenomena over the face of the world, the United States, or of particular sub areas (regions?) within the United States upon which decision-makers as a matter of fact rely. These decision-makers are fed a diet of ideas and techniques which they must themselves prepare to their own taste, not a prepared food from which nourishment is quickly available.

But if there is no single, overriding purpose for regional analysis yet recognized, certainly in principle we should understand the allocation of resources to areas as well as to industry and to occupation and should understand the consequences of changes in that spatial allocation. Furthermore, individual workers, firms, and governmental units—no matter how diverse their interests and views—need to understand the pattern of change in order to adjust to it (or to influence it) intelligently. These reasons are more than adequate to justify the careful and scientific attention effectively given regional analysis by Walter Isard and his associates.

CLARK C. BLOOM

*Jordan Development Board
Amman, Jordan*

Metropolis 1985: An Interpretation of the Findings of the New York Metropolitan Region Study. By RAYMOND VERNON. Cambridge: Harvard University Press, 1960. Pp. xiii, 252. \$5.00.

Projection of a Metropolis: Technical Supplement to the New York Metropolitan Region Study. By BARBARA R. BERMAN, BENJAMIN CHINITZ, and EDGAR M. HOOVER. Cambridge: Harvard University Press, 1960. Pp. vi, 119.

Metropolis 1985 is the master volume in the New York Metropolitan Region Study. In this book Professor Vernon, who directed the four-year project, synthesizes the eight other specialized volumes in the series, and projects the findings relating to the economic and demographic characteristics of the nation's largest and most complex metropolitan area to 1965, 1975 and 1985.

Vernon finds several elements that favor the area's economic growth: an abundant and varied supply of skilled and specialized labor, an industrial "mix" containing many industries growing faster than the national economy, excellent facilities for untried little firms, and all the advantages of external economies. The last arise from the fact that single-plant firms producing non-standardized items with an uncertain output, like high-style dresses or certain types of military electronic goods, must locate so as to have access to

factory space, labor skills, supplies, or freight services provided by others. The same is true of occupations like publishing or advertising, which rely heavily on face-to-face communication. In 1954, almost half the employment in national-market manufacturing industries in the area was classified in these categories; in the nation as a whole, only a sixth.

These advantages are balanced, however, by serious competitive handicaps. Labor, for example, commands relatively high wages in the New York area, making the lower-wage hinterlands more attractive to mass producers of standardized products. The region is also losing part of its share of the nation's port business, which stimulated much of its original economic growth. Again, as the nation's population spreads westward, industries in which transportation costs loom large find it increasingly disadvantageous to locate their plants in the northeastern corner of the country.

Despite these disadvantages, the area's population and economy grew faster than the nation's until 1930. Since then they have developed at a slower pace. Vernon's projections suggest that employment will increase throughout the region, even in the central city (whose population will actually decline), enabling New York City to maintain its historic position as the nation's financial, business, and industrial center. Not all industries, however, will experience the same growth. Some will leave the area to seek cheap, unskilled labor or a geographical position closer to the nation's center of population. In summary, the region's proportionate share of the nation's total employment will decrease slightly in the next quarter century.

The old distinctions between urban and rural society are breaking down, and a new dimension in our thinking about city and country is assuming ever greater importance. Our metropolitan regions already contain more than 60 per cent of the nation's population, and produce 90 per cent of its national income. In the future, these proportions will inevitably grow. One of the most challenging problems of our time will be planning metropolitan living for the future. We have made relatively little headway with this problem because we have not yet learned at the metropolitan level to gather and interpret the data on which such planning must be based as expertly as we deal with corresponding data on the national, state, and municipal levels. As the most comprehensive analysis of a metropolitan area attempted so far, the New York Metropolitan Region Study, which this volume summarizes, will shed important new light on the development and future of the 22 counties that comprise the New York metropolitan area. This is no mean accomplishment, but it will be overshadowed in importance, I suspect, by the techniques for assembling and evaluating data for metropolitan regions in which it has pioneered.

A careful, step-by-step analysis of the complex methods Vernon and his collaborators have devised for taking the pulse of regional economic forces is set forth in *Projection of a Metropolis*, a technical supplement to the series. A distinguished group of specialists helped formulate these methods: teams of economists, planners, and population experts from half a dozen universities and hundreds of governmental organizations, private groups, and individuals contributed facts and ideas. If a new Department of Urban Affairs is established in Washington, its task of developing new methods of analyzing

economic and demographic trends in metropolitan regions will be immensely simplified by the series of specialized studies which Vernon has so brilliantly directed.

FREDERICK SHAW

The City College

Sociological Aspects of Economic Growth. By BERT F. HOSELITZ. A publication of the Research Center in Economic Development and Cultural Change of the University of Chicago. Glencoe, Ill.: The Free Press, 1960. Pp. vi, 250. \$5.00.

This 250-page photo-offset volume consists of reprints of nine articles by Professor Hoselitz which were initially published between 1952 and 1957, three of them in European journals and six in the United States and Canada. He addresses himself to his subject from a base of professional knowledge in both economics and sociology; the essays benefit thereby.

After a chapter dealing with the history of economic thought, the second relates change in Talcott Parsons' "pattern variables" to the process of growth. This seems to me to be the weakest of the essays. Hoselitz misinterprets the functional diffuseness-specificity variable, and his discussion of culturally marginal individuals as social deviants is in part tautologous. Other parts of the essay, however, are suggestive.

In another essay, noting that the absolute number of persons in agriculture did not decrease in western countries until industrialization had advanced far, Hoselitz suggests that, under present conditions of faster population increase, industry in low-income countries will have to develop faster than it did in the West to prevent growing underemployment in agriculture. Noting further that in Japan low-wage, small-scale industry and higher-wage, large-scale industry both exist, mobility between them being minimal, he suggests that Japanese feudal relationships persisted in industry because, large-scale industry being unable to absorb the entire flow of individuals from the farms, their mobility had to be impeded to keep them from pulling down the higher wages in large-scale industry. He concludes that the Indian caste system may be destined to serve the same purpose. (The economic or social motivation which made it seem undesirable that competition should reduce wage disparities is not stated.)

Three essays deal with relationships among the following: population density when growth begins, expansionist versus intensive growth, governmentally controlled versus spontaneous growth, and types of entrepreneurship. Hoselitz draws various generalizations. For example, he suggests that the lower the man-land ratio is, the more expansionist development is apt to be, and the less controlled by central government the process is apt to be. However, he recognizes that a certain type of social structure and personality is necessary for spontaneous growth, and will not necessarily be present simply because population density is low. He notes that Switzerland and the Soviet Union are exceptions to his thesis.

Again, he contrasts entrepreneurial types which may for simplicity be termed managerial and innovational, and suggests that the former appears

in the large industrial enterprises of centrally controlled development. He believes that ruthless driving of workers appears wherever the managerial type of entrepreneurship does (*e.g.*, in the USSR) and will appear in, say, India if development is in governmental enterprises. To obtain small-scale innovational development, he suggests, a country must establish the type of social institution which favors it.

The last three chapters deal with the role of cities in growth. Among other theses, the author suggests, following Lerner, that urbanization up to a certain point fosters literacy and the development of personality favorable to growth, but suggests also that overurbanization leads to susceptibility to radical social movements. His remedy would be to foster, by governmental planning, especially regional planning, the growth of moderate-scale industry in moderate-sized cities. He would thus bring about a Pareto-type distribution of city size which Vining has noted as normal.

Obviously, many interesting points emerge. The essays, however, seem to me to be subject to the following critical comments: (1) They seem to arise out of no consistent theory of the process of growth, but rather seem to be *ad hoc* subgeneralizations arising from considering facts and saying, "What can I make of these?" The spark added to analysis by testing inductions against a clear theoretical model of the process being studied is missing. (2) The logic of the relationships asserted is predominantly circumstantial. One feels too often that there is no surer basis than *post hoc, propter hoc*, or *cum hoc, propter hoc*, when in fact the two factors observed in association may be results of a common cause, common elements in a complex set of relationships, or even, possibly, coincidental. The reviewer was frequently not convinced.

These essays, I think, illustrate the fact that the rapid development of sociological theory now going on has not yet led to a coherent and persuasive body of theory concerning social change. The economist reader will, however, find many interesting suggestions which he may wish to relate to his body of economic theory.

The book has no index.

E. E. HAGEN

Massachusetts Institute of Technology

A Multi-Sectoral Study of Economic Growth. By LEIF JOHANSEN. Contributions to Economic Analysis No. 21. Amsterdam: North-Holland Publishing Co., 1960. Pp. viii, 177. \$4.50.

Characteristic of economic growth are striking changes in the relative importance of sectors of the economy. Serious studies of growth must therefore proceed beyond the pedagogically valuable single-sector models of the Harrod-Domar type. Recent distinguished empirical econometric growth models do employ a disaggregated approach. A group at the Dutch Central Planning Bureau has investigated the long-run prospects of the Netherlands economy with an empirical model which distinguishes some ten productive sectors.¹ This model is used to evaluate alternative economic policies. Last

¹ Cf. P. J. Verdoorn, "Complementarity and Long-Range Projections," *Econometrica*, Oct. 1956, 24, 429-50.

year in this journal, Hollis Chenery reported on a cross-section study of growth distinguishing some twenty productive sectors.² The underlying model is used to assess the importance of the several determinants of growth.

In the present volume, Leif Johansen of the University of Oslo provides an econometric study of economic change which features a disaggregated approach. He constructs a multisectoral structural model; distinguishing some twenty sectors, he estimates the parameters for Norway; and he solves the estimated model into its reduced form which provides the basis for an assessment of the impact of exogenous forces upon economic changes.

The stage for Johansen's study is set by a concise review of the growth-model literature and the analysis of an instructive one-sector model. Then the theoretical structure of his multisector model is developed. In each sector's production function, material inputs enter with the fixed coefficients of Leontief input-output analysis, while direct labor and capital inputs are mutually substitutable, entering in the Cobb-Douglas form. Neutral technological change is allowed for. The total supply of labor and capital are exogenously determined by demographic trends and national savings decisions respectively. These primary inputs are allocated among the sectors in accordance with marginal productivities, subject to fixed differentials between sectoral rates of return. On the demand side, total investment, government demand, and net foreign investment are exogenous, while the allocation of consumer demand among the sectors depends upon total consumption, population (autonomous), and relative prices. The model is thus an interesting extension of the input-output framework to allow for price changes and substitution in both production and consumption.

There follows a discussion of the numerical estimation of the model to depict the Norwegian economy in 1950. The official input-output table is adapted; primary input elasticities are estimated from data on distributive shares. Income elasticities of consumer demand derived from recent household budget studies are taken over, and the full set of own- and cross-price elasticities are estimated from the 1950 national consumption pattern. For the latter, the author employs a technique due to Frisch which is based on the assumption of independent utilities. The handling of data is serious and expert, with attention being paid to several distinctive features of the Norwegian economy.

Expressing the variables as rates of change, Johansen obtains a linear model which can be conveniently solved. This solution, or reduced form, which is the main empirical result of his study, consists of an 86×46 table. Each number in the table represents the impact of a unit change in one of the exogenous variables—total investment, population, total labor force, total autonomous demand, sectoral technological shifts—upon one of the endogenous variables—sectoral investment, employment, production, and prices. The fruitfulness of this solution is demonstrated by several applications. One is to trace the chain of reactions to hypothetical changes in exogenous variables. There is no direct discussion of policy formulation, but this kind of solution clearly provides the essential factual basis for policy choices. A second

² H. B. Chenery, "Patterns of Economic Growth," *Am. Econ. Rev.*, Sept. 1960, 50, 624-54.

application is to insert observed values of the exogenous variables to assess their contribution to the changes in the endogenous variables. An illustrative finding is that of the 3.8 per cent growth rate in total value added in Norway, 2.6 per cent is attributable to capital accumulation, .3 per cent to labor force increase, .5 per cent to technological progress, and .4 per cent to autonomous demand changes.

Johansen's multisectoral study is a fresh example of the usefulness of an econometric approach to the analysis of economic growth. The interweaving of theory and facts is skillful throughout. The handling of foreign trade, however, is disturbing. A distinction is made between noncompetitive imports (which are required in fixed proportion to each sector's output), and competitive imports (which are merged with the production of the corresponding domestic sector). Then exports and total competitive imports are treated as exogenous. This rather cavalier treatment by-passes the balance of trade considerations which worry developing (and developed) economies and surely fails to do justice to the role of import substitution in economic growth, demonstrated by Chenery.

ARTHUR S. GOLDBERGER

University of Wisconsin

The Attack on World Poverty. By ANDREW SHONFIELD. New York: Random House, 1960. Pp. xii, 269. \$5.00.

This easily read, stimulating book is a journalistic survey of an array of complex problems associated with economic development. The author, the London *Observer's* economics editor, has obviously given considerable thought to his subject. Although this reviewer does not agree with all of the prescriptions, his diagnosis is poignant and the audacious approach is appreciated. Shonfield has a realistic grasp of the problem of world poverty and presents his (occasionally uneven) argument with such gusto that nationalistic bureaucrats everywhere should be jarred from their complacency. Some of his reasoning involves the fallacy of omission; but much of his rather unorthodox commentary needs to be said and deserves a large audience. His "message," however, can best be criticized by those with some sophistication in development economics.

The discussion of development problems in Part I "is impressionistic rather than systematic." Much ground is covered in a succinct and provocative manner—e.g., he disagrees with the current emphasis on general education as a necessary prerequisite to growth, and believes "the political setup [in Latin America] turns out to be the first and largest obstacle to rapid economic progress" (p. 5). In view of limited capital availability, "unfair shares" are advocated and they should be placed by the advanced countries where the most good will likely result—i.e., where the promise of dynamic development is greatest. Mexico, Brazil, and India would be cases in point, while in contrast "African demands for capital during the 1960's will not

require special economic aid on a large scale from the West" (p. 80). Greater emphasis on "pre-investment"—pilot plants and technical assistance—is also urged in order to secure the necessary basic data to facilitate optimum utilization of available resources. The virtues of regional common markets are elaborated along with potential problems. Bilateralism and discriminatory trading arrangements are defended (essentially Prebisch's view) in a general criticism of the prevailing doctrines espoused by GATT and the International Monetary Fund: a new set of rules is needed to meet the trading imperatives of underdeveloped countries.

After recognizing the substantial costs involved if successful economic development in "poor" countries is to be achieved, in Part II he "takes a leap into the frankly improbable. Say that the rich countries . . . put up an additional one to two billion dollars a year, with no strings attached" (p. 95). With reference to this question of providing more aid, Shonfield suggests a greater use of surplus agricultural commodities, more effective utilization of second-hand machinery (which is obsolete only where labor is expensive), and the tying of aid to industrial goods which are chronically in temporary surplus because of excess capacity in the rich countries. He is less convincing in his arguments in favor of minimizing the use of labor-saving methods—in some important areas capital-intensive technology is mandatory—and in his case for having the World Bank expand its lending operations into a wide range of agricultural projects. With numerous requests for loans, the Bank is already pressed to allocate efficiently its limited funds without adopting a policy that would further fragment its effort.

Part III, "The Role of the United Nations," is perhaps the book's outstanding (and most controversial) section. In short, the author is not happy with the UN's current organizational structure and range of operations—much greater integration is imperative. Significantly, he does not foresee the possibility—or desirability—of channeling large quantities of capital through the UN. His analysis of the bureaucratic impediments to efficient administration in this multinational organization is lucid and forceful. Paul Hoffman's Special Fund operation is praised for doing yeoman work in the vital area of "pre-investment," and multilateral technical assistance is deemed desirable. The ILO is commended for its "go slow" view on social welfare during the early stages of development when high profits are so necessary in the process of capital formation. However, the UNESCO "community development" program and the WHO's "death control" activities with a notable absence of "birth control" education (even when requested) are correctly criticized with potent arguments. The United Nations has a key role to play in future international relations and should, accordingly, prune obvious conflicts of interest from its organizational roots. We can hope this book will be widely read by policy-makers throughout the world—heat will be generated but considerable light should be forthcoming also.

J. D. DEFOREST

Denison University

Die Wirtschaftliche Entwicklung der Volksrepublik China. By BERNHARD GROSSMANN. Stuttgart: Gustav Fischer Verlag, 1960. Pp. xi, 412.

This analysis of "The Economic Development of the Peoples' Republic of China" is Volume 6 of the series "Economic Studies," prepared under the auspices of the Institute for Foreign Trade and Overseas Economics of the University of Hamburg. The author has drawn upon material published in Chinese, Russian, German and English, in mainland China, in Hong Kong and elsewhere.

The over-all aim of Chinese economic planning is, he points out, to change an agrarian country into a socialist industrial nation. Chronologically, he first discusses the *Aufbaubase* of China, the foundation period of 1949-1952, in which the principal tasks were to boost production capacity, remedy the monetary situation and to reorient the economic mentality of the population. The first five-year plan, 1953-1957, was devoted to the implementation of what W. W. Rostow calls "take-off into self-sustained growth." The second five-year plan, 1958-1962, has produced the experiment with the communes and the great leap forward, to accomplish in years what normally might take decades. Fully 60 per cent of all investment was attributed in the second plan to industrialization, and 10 per cent to agriculture, including reforestation and irrigation. Capital investment represented 22.8 per cent of the national income in 1956 but it was to level off at 20 per cent in years to come.

The peoples' communes were described by the Chinese communist leaders as basic units for "working people to combine voluntarily under the leadership of the communist party and the peoples' government for the purpose of tackling the tasks of industrialization, agricultural production, distribution, as well as cultural, educational and political problems." The communes were also to remove disharmonies between town and country.

The implementation of the communal principle was to precede that of communism. In the former, property is supposed to be communal, while in the latter it belongs to the people. The author points to the abuses of the communes, such as concentration of authority and excessive work. He also quotes the criticism of the Russians who contend that the system of the communes is not workable now.

Grossman's analysis reveals a significant ambivalence in Sino-Russian relations. Until 1960 the Soviets helped the Chinese with the launching of 211 major industrial projects and are to aid them in the next seven years with the building of 78 large metallurgical, chemical and other plants. In addition to these, the Soviets have been preparing blueprints for the building of plants by the Chinese themselves, have provided them with other technical advice and opened up their technical schools to students.

At the same time, however, the Chinese appear to be in competition with the Russians along a broad front. They have accorded high priority to the problems of Inner Mongolia, directly adjacent to Soviet-controlled Outer Mongolia, which is part of historic China. The Chinese have given preferential treatment to the Autonomous Uighur Region Sinkiang, in the extreme northwestern part of their country, adjacent to the Soviets' Central Asian

Republics. After the Russians had launched a massive program of technical assistance for economically underdeveloped nations, the Chinese, very under developed themselves, have launched a large-scale "point four" program in such sensitive areas as the Middle East and parts of South-East Asia. Significantly, the Russians are helping India while the Chinese are causing her trouble.

The author points out that the Chinese seem to have profited from some of the Russians' failures. While the Russians launched their program in a dogmatic, inflexible way in the period of integral communism after their seizure of power, the Chinese recognized the usefulness of the free enterprise mentality of the "national bourgeoisie," whose contributions to the national economy were to be built into their planned system. Also the Chinese are more aware of the importance of transportation than the Russians were. With all their dynamism, the Chinese have set themselves a more easily attainable goal than the Russians. The Soviets were to "overtake and surpass" the United States. The Chinese communists are content with overtaking Great Britain by 1972.

The difficulties, as the author points out, are very great. Industrialization entails urbanization which Chinese topography renders extremely difficult. Also, the Chinese seem to be aware of the fact that the communist ideal—to everybody according to his needs—is attainable only if an assured supply of disposable goods can be accumulated.

This excellently documented and objective book ends with a challenging statement and a question mark. The statement is that Thorstein Veblen's immortal "conspicuous consumption" is paralleled in hungry Asia by the "conspicuous production" with which, China, among others, wants to influence the world. And the question is the following: Which of the two most populous countries of the world, China or India, will be able to allay hunger? There is no more important answer than the one history will give to this question.

EMIL LENGYEL

Fairleigh Dickinson University

Foreign Capital and Economic Development: Japan, India, and Canada.

Studies in Some Aspects of Absorption of Foreign Capital. By NURUL ISLAM. Rutland, Vt. and Tokyo: C. E. Tuttle Co., 1960. Pp. 245. \$5.00.

This book, with the help of Gottfried Haberler, contains much that is sensible and timely regarding the very important questions with which it deals. Part I discusses the problem of absorbing foreign capital; Part II gives an historical review of the pattern of foreign investment; Part III attacks the perennial problem of debt-service; and Part IV discusses the ideal relation between foreign and domestic capital. The analysis is fortified by numerous case studies.

Despite its great promise and the timeliness of its subject, the book suffers from one great defect: The majority of the factual materials refer to pre-1930 experience. At best the time covered seldom gets beyond 1942. In view of all that has happened and is happening in the world today in this field, so

drastic a limitation seriously impairs the value of the study. I don't mean to say that the reader will not find much of interest, and much that is helpful in the book, but I can't help feeling that this is more a work in economic history than in current economic policy.

DAVID MCCORD WRIGHT

McGill University

Les inflations sud-américaines: inflation de sous-développement et inflation de croissance. By DENIS LAMBERT. Travaux et Mémoires 5. Paris: Institut des Hautes Etudes de l'Amérique Latine, l'Université de Paris, 1959. Pp. 580.

This long, carefully documented work is the fifth in a series prepared under the aegis of the Institute for Advanced Latin-American Studies in Paris. Its author lived for many years in Brazil and traveled extensively. He brings together the results not only of his own studies but also the fruits of publications in four languages.

The author rejects at the start the idea that a simple quantity theory of money can explain the inflations in South American countries, or provide a guide to the formulation of measures for their control. The economies of these countries are at too low a stage of economic development; in many of them, barter and money exchange exist side by side, and whole sectors of the economy may exist as autonomous elements with little contact among them. He therefore begins by making a distinction between the inflation of underdevelopment and the inflation of growth and change.

Underdevelopment is a relative matter. A country which is underdeveloped is so by comparison with other countries, and by comparison with its own needs and resources. Per capita income is not a suitable criterion for determining stages of development, since this figure is an arithmetic average, not a typical or modal value, and may be grossly distorted by a few very large incomes while the great mass of the population is desperately poor. The common characteristics of underdevelopment in South America are the low standard of living of the masses, the inefficiency of production, the economic and financial dependence on foreign markets, and the backwardness and ineffectiveness of governments and other institutions.

The inflation associated with underdevelopment is in large part institutional and structural. Poor banking systems, primitive money markets, lack of cooperation between government and central bank if indeed there is a central bank, are apt to be accompanied by budgetary imbalance, high salaries for ineffective government officials, great inequalities in income distribution, and slow growth of capital for investment. Even the small customary amount of saving is discouraged, once the inflation has got under way. Automatic wage increases related to price increases are not matched by increasing productivity, and the wide disparity among industries in this respect is intensified.

The underdeveloped country is susceptible also to inflation transmitted from abroad through its foreign trade, since it is apt to depend upon exports

of only one, or at best a very few, of the primary products which it produces. Most of these, in the case of the South American countries, go to North America, which narrows the market still more. Primary prices are subject to wide fluctuations. When the price rises, as it did for Chilean copper after 1945, the economy expands. When it falls again, the government feels obliged to support the price, and this necessitates borrowing. At the same time imports become more expensive and thus increase internal prices.

The inflation of underdevelopment has another aspect besides the institutional one. It tends to prevent growth. Because the country is underdeveloped there are no automatic forces to bring the economy back to equilibrium (such as reducing demand for the higher-priced commodities), so no brake is put upon inflation and it proceeds at an increasing rate. In Bolivia the cost of living was multiplied by 23 between 1952 and 1956. In Chile the cost of living rose about 5 per cent annually during the depression years, about 15 per cent annually during the war, between 15 and 20 per cent annually before the Korean war, and 72, 75 and 56 per cent respectively during the years 1954, 1955 and 1956. During this period of hyperinflation there was increasing stagnation of economic life in these countries. Investment declined and the productivity of capital was reduced. Chile has had one of the slowest rates of growth in all South America as a result of the inflation. Even the productivity of agriculture has remained low in Chile and Bolivia, in comparison with Brazil. Only mining has evidenced any increase in productivity, and this, far from correcting the inflationary expansion, has served only to widen the gap between the different groups of the population, and to add social instability to the economic instability.

The second major type of inflation considered by this author is the inflation of growth and change. Brazil and Colombia offer examples of this type, which is accompanied by disequilibrium between production and supply on the one hand, and demand on the other. Growth inflation, unlike the inflation of underdevelopment, benefits from several automatic-corrective devices which tend to hold the inflation within bounds. New investment is apt to pay for itself in a fairly short period and the rate of reinvestment of profits is high. This increases production rapidly and tends to reduce unit costs and prices. These factors help to prevent the possibility of hyperinflation, as was evidenced in Brazil in the postwar years. Its inflation, which would otherwise have got out of hand, was kept within bounds by the rapid rate of growth of the economy.

Growth inflation is not without its own disadvantages however. Funds for government enterprises, which are apt to be of the unproductive type in the short run, will probably be supplied out of bank credit, since the tax base is narrow and the distribution of income is unequal. Interest rates will be high. Rising prices will enable some of the inefficient industries to continue in the "iron lung" of inflation, and there will be unequal effects upon prices, with agricultural and consumer goods prices tending to rise more rapidly than those of wholesale and industrial products. Indeed the principal danger in growth inflation may be the increasing disparity among social and economic

groups, adding to the instability. Luxury goods for example, and luxury services such as hotels and restaurants, may increase more rapidly than the basic commodities needed to provide minimal housing and clothing for the bulk of the populace.

In spite of these difficulties, growth inflation is not a decisive obstacle to rapid development of an economy. Brazil, Colombia and Venezuela provide examples of rapid economic growth in the postwar period, in spite of varying degrees of inflation. Among these, Venezuela has had the least, the fortunate result of the relative stability of the oil export prices on which her economy depends, and of the relative efficiency of the monetary controls. However Venezuela suffers from what the author describes as hidden inflation. Her cost of living is much higher than that of Brazil, and the stability of the price average conceals a wide dispersion of prices, with food and textiles at the top of the list. Industrial and mining expansion has been more rapid than agricultural, and much of the new investment has gone into speculative ventures such as luxury hotels.

After his survey of the two principal types of inflation, the author in the third section of the book turns to methods by which inflation may be controlled and growth promoted. He believes that neither strict financial orthodoxy on the one hand nor continuing budgetary deficits on the other will solve these problems. Any effective control measure must take into account not only the economic but also the social and political context of the situation. Monetary stabilization is necessary, but it must not be sudden or deflationary. If there is to be economic growth, there must be new supplies of funds, but they will be rapidly absorbed and therefore not inflationary if production increases.

He emphasizes also that an inflation on the point of turning into hyperinflation can be stopped only by adequate power in the hands of the monetary authorities, but this must be backed up by other types of controls if it is to be effective. He presents therefore three basic measures. The first is internal monetary stabilization to absorb the excessive purchasing power and to break the pattern of institutional inflation. The second is to counteract the inflation transmitted through foreign trade by stabilizing export prices if possible, and "sterilizing" foreign trade revenue so that its fluctuations do not immediately affect the domestic economy. The third device is the control of investment by a policy of priorities. For each of these measures he gives examples of successful use.

This happy combination of theoretical analysis with factual description seems far more useful for both understanding and control than many of the current publications based on models with little relation to the real world. It should be noted however that the author has few illusions about the reliability of some of the statistical materials with which he had to work; he remarks that in this area the art of the economist often consists of reasoning correctly from incorrect data.

The book is already long, but it might well have included some discussion of the factors which determine why some countries are still subject to the

inflation of underdevelopment, while others are past the take-off point and are struggling with the inflation of growth and change.

MARGARET G. MYERS

Vassar College

The Diplomacy of Economic Development. By EUGENE R. BLACK. Cambridge: Harvard University Press, 1960. Pp. 74. \$3.00.

World Bank President Eugene Black has written a brief but highly illuminating book that warrants the attention of all persons interested in problems of international economic development.

This compact volume [the 1959-60 Clayton Lectures at Tuft's Fletcher School] is introduced with a statement of the potential difficulty encountered when embarking upon economic development studies:

To digest and order this body of literature would require a philosopher, well-schooled in academic economics, with a good command of history, who held a degree in civil engineering, with geography and anthropology as minor subjects, and who had taken a postgraduate course in modern social psychology (p. 1).

He modestly continues: "Lacking these professional requirements [who has them?], I cannot claim to make any analytical contributions to this sprawling subject," and then, launches into his chosen topic; the diplomacy of development or "... how to secure the advantages in terms of development without arousing too much hostility."

In what follows, Black's philosophy of development is revealed in connection with a review of the Bank's activities in underdeveloped countries during the past decade. His descriptive commentary runs the gamut from frustrations encountered by trained men without work to the appalling misery resulting from rapid urbanization under conditions of woefully inadequate social-overhead investment.

The major problem facing the West, he contends, is that of securing meaningful economic growth in the "poor" countries that will approximate the rates achieved under communism. It is in this vital task that "development diplomats"—instilled with a sense of vocation—play their necessary role. They should *not* be solutions-oriented advisors impressed with propensities to give positive answers, but instead be "planners" charged with the responsibility of illuminating the relative costs and benefits of particular programs. The native politician, faced with "a conflict between the demands of growth and the demands of social welfare . . . economic security and employment for all" (p. 34) must be aware of the alternatives in choice of commitment if maximum gains are to be realized. He must be cognizant of consequences before, not after, a given course of action is undertaken. This will not be easy; but at best external aid can only represent a catalyst in the successful launching of self-sustained economic growth, so optimum utilization of scarce domestic resources is absolutely mandatory.

It is hoped that the Bank, with a growing pool of international funds, will

continue to expand its marginal, but strategic, lending efforts in response to the ideal of Black's "new" diplomacy.

A brief appendix (prepared by the Bank staff) outlines the institution's origin and its activities since inception.

J. D. DEFORREST

Denison University

India: Mixed Enterprise and Western Business: Experiments in Controlled Change for Growth and Profit. By DANIEL L. SPENCER. The Hague: Martinus Nijhoff, 1959. Pp. xii, 252. f 15.75.

This study was designed, the author tells us, to contribute to economic collaboration between the Free World, and the developing economies of poor countries like India.

His brief is addressed not so much to economists as to potential American investors who may have been frightened off by the extent to which the government in India has taken on a leading role in industry and finance. He argues that the mixtures of public and private enterprise, involving foreign as well as domestic participation, with which India has been experimenting, deserve sympathetic consideration. The volume includes a proposed classification for the various types of mixed enterprise, a series of notes on particular enterprises, and a number of tables reproduced or summarized from previous publications.

The reader may find it useful to compare Spencer's discussion with the penetrating analysis given in A. H. Hanson's recent monograph entitled, *Public Enterprise and Economic Development* (London, 1959).

DANIEL THORNER

Ecole Pratique des Hautes Etudes, VIe Section
Sorbonne

Economic Systems; Planning and Reform; Cooperation

European Socialism: a History of Ideas and Movements from the Industrial Revolution to Hitler's Seizure of Power. Two vols. By CARL A. LANDAUER. Berkeley and Los Angeles: University of California Press, 1959. Pp. xx, 1180; x, 714. \$20.00.

This impressive and monumental work is an attempt to survey socialism throughout continental Europe (with the exception of what was formerly the Balkans) from the period of the Industrial Revolution to the seizure of power by the Nazis. A review can scarcely do justice to a work of such scope and dimensions: it can do little more than draw attention to some of its features. As the author is careful to stress in his introduction, his task has been made the more formidable by his attempt to combine a history of events and of movements with a history (one might add a critical history) of ideas. ("The size of the present book," he says, "could have been kept within narrower limits if the subject had been confined to the development of ideas . . . but I was interested in the interaction of ideas and movements, and therefore wanted to cover both.")

Starting with Saint-Simon and Fourier in the early 19th century, the book includes within its sweep the various trends in socialist thought and the movements and forms of organization which they inspired in France, Germany, Russia and Italy up to the first world war; embracing the conflict of Marxians and Proudhonists in France, of Marxians and Bakuninists in Southern Europe. Later in the century we meet the controversies over French "possibilism" and German revisionism, around French and Italian syndicalism and the role of the Sorelian "myth," and the Millerand controversy about participation in bourgeois governments. Socialism, the author suggests, originated from the fusion of general ideas of equality and protests against inequality (which had been endemic in previous centuries) with the realization which dawned with the age of industrialism that instead of removing inequality "by returning to a more primitive organization of production," . . . new forms of economic life were possible and necessary to reconcile the use of modern methods of production with a greater degree of social equality." Thus "from about 1800 on the opposition to inequality developed into a new form," and this is the justification for starting his history at the period which the author has chosen.

It may serve to give some idea of the remarkable sweep of the first volume if one says that trade union organization and policies are here included together with political parties, their personalities and their programs; and at crucial points of the story the main events in the general political life of the country are surveyed. Thus we have the events of 1848 in France and Germany and the Paris Commune; and together with an account of the diverse trends in the Russian revolutionary movement from the Petrashevsky circle and Herzen and Chernyshevsky to the Narodniks, the Mensheviks and Lenin, we are given a fairly detailed account both of the 1917 revolution and of the Russian civil war of 1918-20.

Towards the end of Volume I there are vivid chapters, tense with the omens of a prelude to tragedy, on the rise of the Weimar Republic, the turmoil of the Spartacus period, the Kapp *putsch* and the short-lived Bavarian Soviet government; and on the survival of the Weimar Republic through the suppression of the left-wing Zeigner government in Saxony, the Bavarian Black Reichswehr and the Hitler-Ludendorff "beer-cellar *putsch*." There is also a lucidly told and instructive chapter on the rise of fascism in Italy. One should perhaps add the comment that the author's style and manner as an historian quite lack the Teutonic quality that attaches to the conception and proportions of the work as a whole. Professor Landauer not only displays an impressive mastery of detail but can weave it into a story with lucidity and unpretentious ease: a story that is told, at least so far as the 19th century is concerned, with commendable balance and objectivity.

Landauer has not been content, however, simply to compile a history of ideas and of movements. He has manifestly conceived his work as a vindication, through a historical critique of policies and of ideas, of the particular brand of modern social democratic doctrine to which he adheres. One cannot complain if an historian's viewpoint inspires and shapes his story: it would not be history, but a bare chronicle or a dull, shapeless, descriptive rigmarole, if some principle of selection, of coherence and of interpretation were not im-

plicit in the design. But though a story can hardly exist without such a framework, there are varying degrees in which the framework can dominate the story. Should it come to dominate overmuch, then one is bound to judge the story in a different light—as a polemical thesis that has subordinated history to its own pattern. One can not unfairly say, I think, that as events which fall within living memory are approached in these two volumes, the element of political exegesis and apologetic becomes increasingly dominant to an extent that a reviewer cannot ignore. And one cannot ignore it in considering the question (an ungracious one to pose had not the author himself implied it in his preface) whether the dimensions on which the work has been planned are reasonable or disproportionate. There are, indeed, occasions on which one has the feeling that one is reading a pamphlet writ very large.

The thesis to which it becomes clear before the end of Volume I that the work is directed can be briefly (though no doubt imperfectly) summarized in this way. In the modern age the idea of effecting social transformation by violence and civil war is unthinkable—ethical ideas about the permissibility or impermissibility of violence quite apart. From this it seems to be concluded that social revolution in the sense of a radical transformation of property-relations, achieved as a single historical event (or more-or-less concurrent group of events) is excluded from consideration; since history shows that privileged classes always stubbornly resist any concerted move to dispossess them of their privileges (“... a revolution which changes the social and political institutions suddenly and fundamentally would be likely to put too many obstacles in the course of its own success”). Socialism, if it is to continue as an historical movement in the 20th century, must pursue a Fabianesque policy of gradual modifications in the existing system in the direction of greater equality and social control, adapting its aims at each stage to what is practicable and acceptable under democracy.

Thus democracy (which seems to be interpreted throughout, not in its 19th century continental-European sense, but in the modern Anglo-American sense of a particular set of political institutions and rules of procedure) is made apparently to take precedence over socialism and to prescribe its limits. While the author, in discussing the 19th century burgeoning of socialist ideas, treats Marx with considerable respect, and credits his theory of the class struggle with having effected a junction of socialist ideas and the working-class movement, and with having endowed the latter both with self-confidence and with a social goal, he will have as little truck with Marx's slogan of “dictatorship of the proletariat” as he will with the major part of Marx's economic theory or with what he calls his “determinism.”

Much in this thesis evidently turns on the precise interpretation of social revolution; and here it seems to the reviewer that the author has been less than precise, and even at times guilty of some ambiguity. For part of his argument on the question, he seems to identify it with revolution by violence and extraconstitutional means; then at a later stage, he gives to the word the meaning it has always had in the socialist movement (whether Marxian or non-Marxian) as a radical change in the property-system, and hence in social or class-relations; only to identify the two meanings again in the conclusion that a social revolution consists of any social change that arouses

too great opposition from the existing ruling class to be effected without resort to extraconstitutional, or alternatively to dictatorial, means.

This seems to be both too subtle and too simple. No account is taken of the very obvious fact that what is possible in the way of social change varies greatly with the historical situation, and that one way of making radical change impossible is not to strive for it; that the notion of "force" in political and social affairs, whether used conservatively or with revolutionary intent, is far from simple; that it is present in varying degrees in every society to an extent which makes it difficult (some would say impossible) to say how much of it is reconcilable with "democracy" and to say where the latter ends and "dictatorship" begins (concerning democracy the author himself admits that "there is little chance of offering a definition which would be unanimously accepted").

In dealing with events in Italy and Germany in the final decade of his period, Landauer implies that a coalition of the left with bourgeois parties (at least, with such of the latter as were not covertly abetting fascist attacks on left-wing organizations), if formed in time and if resolute enough, might have succeeded in suppressing the fascist movement. Would this, or would this not, have been "left-wing dictatorship"; and if so are "democracy" and "dictatorship" necessarily so "mutually exclusive" as is maintained? As he himself points out, "democracy is never perfect"; and accordingly "it is not always clear whether there is enough democracy at a given time in a given country to outlaw revolution from a democratic standpoint." (One wonders how much concentration of economic power in a society suffices to convert it from a democracy into a dictatorship.) Thus a "democratic revolution" he deems possible, whereas "a democratic dictatorship is a contradiction in terms."

On a matter incidental to this main argument—the vexed question of "reforms," which has dogged discussion within the socialist movement for a century or more—it could again be complained that the author was less than just. As he represents it, the issue turns on whether or not the achievement of reforms strengthens or weakens the existing system; and since he thinks that most of the reforms that have been advocated by the labor movement have tended to strengthen the system (if only by allaying discontent), he assumes that those aiming at a revolutionary change of society can have no truck with them. It would be difficult to maintain that the issue has never been debated in this form. But there can be little doubt, I think, that for revolutionary thinkers from Marx onwards the issue was seen essentially, not in terms of the effect of reforms *per se*, but of the effect on the movement itself of the *struggle* for those reforms: an emphasis which led them to attribute a radically different significance to reforms that came gratuitously from the ruling class and reforms that were the subject of political struggle and were *won*. If this be so, it is scarcely a just summing-up to say that "the resemblance between the reform programs of gradualists and of dialecticians is only superficial—the one tries to improve the existing system, even at the price of keeping it alive longer, the other tries to destroy it . . . even at the price of a temporary deterioration of the conditions under which the underprivileged have to live."

The second volume, concerned as it is with events that are more fresh in

the memory, is at the same time more arresting and more controversial. In its 500 pages of text it embraces events both in Soviet Russia after the end of the devastating civil war and in the countries of central and western Europe where fascism was establishing itself or on the eve of doing so. The last 200 pages are occupied with detailed notes (since they contain much interesting material, one regrets that they are relegated to a solid block of 150 pages in small type at the end), a 30-page bibliography of books and articles and of documents, and an extensive and efficient index both of subjects and of names.

It is in this volume, although it deals with no more than the events of a decade, that one most particularly has the sense that the scope of Landauer's enterprise may have been defined too broadly—or else that the work should have been extended, possibly to 3 or 4 volumes, to enable a fuller treatment of a number of specialized themes, which once they have passed beyond the stage of textbook-summary deserve more penetrating treatment on the scale of a monograph.

Thus the two chapters on Soviet Russia under the NEP (and the eight pages on the first five-year plan) give an informed and convenient, if selective, summary of what was happening in those transitional years; but the cross-currents and the controversies of this period were complex and confused, and for any full understanding of these a fuller treatment is needed (it is a little strange in so erudite a work that more use is not made of E. H. Carr's comprehensive work on this period).

As one might expect, the longish chapters on the Weimar Republic and its decline and the advent of Hitler are more detailed and (one feels) more revealing; although there is a tendency to view events from the angle of the S.P.D. and to afford an ex-post justification of what is admitted to have been an "uninspiring course" of successive retreat, eventuating in "costly concessions to the conservative point of view," the toleration and bolstering-up of the reactionary Brüning government and finally of Hindenberg. All this was perfectly logical given the initial "repudiation of Bolshevik methods and a Bolshevik alliance." (It is here that we incidentally meet the revealing statement that "Social Democrats were by necessity people who had sunk their roots deep into the soil of existing society.")

In the concluding 100 pages the author turns to survey the contribution made by neo-Marxists (including Hilferding, Rosa Luxemburg, Otto Bauer, Grossmann, Sternberg and Lenin), the economists' debate about economic calculation in a socialist society and to a brief glance at the future. And it is in these last three chapters that we find the author's own credo most succinctly expressed. The main service of Marxism is to have enabled determinism to "run its course" and so leave the way open for "a revival of interest in the economic problems of a socialist society" (although the author several times declares them to be incompatible, it is not clear why belief in historical forecast should entirely exclude discussion of the best shape for a new system to take). This new interest in the problems of socialist society, in particular the rise of the *Marktsozialisten*, swept away the traditional distinction between bourgeois and socialist economies, and merged socialist postulates with neo-classical doctrine: a development of which the author evidently approves. The final chapter opens with the declaration that "the only chance for social-

ism to preserve its character as an economic reform movement, and perhaps even its existence, lies in increased emphasis upon economic planning in the sense of organized collective foresight of economic developments." This "collective guidance," however, "does not necessarily require the abolition of private property in the instruments of production," and is apparently conceived of as being grafted upon the existing system of property and of private enterprise; with traditional socialization of the means of production and campaigns against economic privilege left behind as historical anachronisms.

Socialism is left to survive, if at all, as a combination of ethical creed and humanitarian message with a program of social engineering from which class struggle disappears. As such, this renovated social democracy is represented (in the concluding pages) as being as much opposed to the growing strength of communism as in prewar days it was opposed to fascism. Rather sadly he concludes that "in the atomic age a crusade against the Soviet Union would amount to a suicide of mankind"; "we must reconcile ourselves to the realization that the large-scale use of force is now obsolete even as a means to extremely desirable ends"; in both halves of the world reliance must be placed instead on a peaceful evolutionary process.

MAURICE DOBB

Trinity College
Cambridge, England

Economie capitalistiche ed economie pianificate. By PAOLO SYLOS-LABINI.
Bari: Laterza, 1960. Pp. 246. L. 2000.

The essays on capitalistic and planned economies collected in this volume are of interest, intrinsically and as a product of that significant segment of opinion among European intellectuals which operates within a Marxist framework.

The book is organized in three parts. The theoretical groundwork is laid out in two lengthy essays, dealing respectively with the problem of economic development according to Marx and Schumpeter—at whose feet Professor Labini sat as a graduate student at Harvard—and with monopolies, stagnation and Keynesian policies. This is followed by a detailed analysis of the U.S. recession of 1957-58 and by two papers of somewhat uneven value on nationalization in Britain and the contribution of public investment and expenditure to the "German miracle." The concluding section discusses comparative growth trends in the Soviet Union and the United States, and the development of Red China, which the author visited for two months in 1958.

The heart of Labini's argument is that the modern business cycle is part and parcel of the historical process of capitalistic development as anticipated by Marx and suggested also by Schumpeter. And while much of what the author has to say on the behavior of the postwar American economy and its inability to operate steadily at full capacity could be easily fitted within a New Deal (or shall we say, now, New Frontier?) approach, his Marxist assumptions lead him, naturally enough, to entirely different conclusions.

Labini follows in the main Keynes in stressing the chronic insufficiency of effective demand (and to a smaller extent the role of liquidity preference,

about which he finds some anticipations in Marx), but links it to the effects of monopolistic concentration rather than to a diminishing propensity to consume. In common with others who focus upon oligopolies and "administered prices," Labini feels that when the flow of investment is not governed by the independent state of demand, but reflects a small number of decisions which are keyed to the amount of corporate earnings available for reinvestment and to a monopolistic wage-price structure, all components of the general level of economic activity must fall short of their optimum. Market demand becomes a dependent variable of investment, rather than the other way around. Full employment and an acceptable rate of growth could be restored only through a steady expansion in public investment and the related growth of the public sector of the economy. Labini believes however that this is bound to meet with almost unsurmountable political and social obstacles, which can be eliminated only as a result of the pressures originating from growing instability and major depressions.

Following Marx, Labini points out that monopolistic concentration is the necessary feature of an advanced and hence "superior" stage of capitalistic development. It helps raise productivity and personal income, and to that extent it is an element of strength. Ultimately, of course, its adverse features take the upper hand, since they lead to chronic unemployment and instability. The terminal point of the evolution is a highly centralized system, largely under public control.

Not unexpectedly, Labini takes a distinctly favorable view of the economic performance of Soviet Russia and Red China, in contrast also to the sluggish growth of the U.S. economy. He does not gloss over the human cost of the communist type of development, but notes that abject poverty and the lack of freedom and dignity were the lot of the great numbers of people under the old dispensations. Recalling also the sufferings entailed by the early stages of the Industrial Revolution in England and other capitalistic societies, he is satisfied that the sacrifices exacted by the communist societies find a substantial degree of justification. Labini anticipates that a socialistic or at any event highly centralized pattern is likely to be adopted by most of the underdeveloped countries. At the same time, he senses that Soviet Russia, and perhaps also Red China, are beginning to move toward a relaxation of their coercive features, and is convinced that the restoration of a growing measure of individual freedom becomes necessary and inevitable as a planned society reaches economic maturity.

It would be out of place to debate basic social philosophies in the context of a review. The author is entitled to his convictions, which he holds sincerely and not altogether uncritically; and it is true perhaps to a greater degree than it is generally appreciated on this side of the ocean that Marxism is a factor which influences the thinking and policies of its opponents no less than of its supporters. It is clear, however, that, because of his commitment to the Marxist view of history, Labini's endeavor to combine the latter with an analytical investigation of the U.S. business cycle cannot be a very fruitful one. The two different levels of abstraction are merged in terms of fairly predictable and predetermined conclusions. The marshalling of the factual evidence is one-sided, and there is little disposition to investigate adequately alterna-

tive principles and policies which cannot be fitted to the dialectics of the system.

Though Labini is quite familiar with the contemporary U.S. scene, he overlooks the profound economic and social changes which have occurred in recent decades, and—among other things—the stabilizing effects of social security payments and other transfers upon the flow of income. One finds also nowhere mention of the pitfalls entailed by comparisons between the U.S. and the communist economies, due not only to their different stages of maturity but also to the vast disparity in the amount and reliability of the information available.

As for the communist economies, one might wish that the stress on their extremely impressive accomplishments were balanced—as it should be if the same critical standards are to be applied to the East and the West—by some notice of their own factors of instability, which become apparent from time to time when there is a major failure in crops or when basic shifts of economic policy are suddenly disclosed. And while Khrushchev's tentative gestures toward decentralization and greater emphasis on consumer goods are probably significant, it remains to be seen whether, and if so how, the liberalization inherent to a mature stage of the economy may be permitted to gain the impetus required to bridge the gulf between a totalitarian and a democratic society.

BRUNO FOA

New York, N.Y.

State Capitalism in the Economy of the United States. By PAUL K. CROSSER.
New York: Bookman Associates, 1960. Pp. 158. \$4.00.

This is a timely and stimulating book. The author avoids the textbook tangle of ideological comparisons and assumptions. State capitalism, accordingly, does not imply the existence of two economic sectors, public and private, or of state monopolies in industry. On the contrary, as defined by Crosser, the concept of state capitalism is applied to the causal relationship between *ad hoc* government interventions in view of periodic "malfunctioning" (or due to the exigencies of war), and an evolving pattern of "privatization," e.g., the appropriation of public funds for private ends, and the utilization of public controls for the protection of private interests. The latter implies tacit acceptance of the "monopoloid" character of subsidized key industries, the recognition of latent group conflicts in a pluralist society like ours, and hence, the use of public ("formal") controls for harmonizing the interests of business and its counterpart, the big unions. This is discussed in the 6th and 7th chapters.

Sismondi (as quoted by Crosser) proposed the use of fiscal funds for state assistance to bankrupt industrialists and to the unemployed during a depression. The antidepression measures of the early 1930's were more or less of that nature. But, while these interventions were generally considered temporary, the whole complex of subsidization and protection, as it evolved in the postwar years, is now accepted as permanently "built-in." (The glib use of this term for popular consumption to designate all such practices as counter-cyclical, implies general approval.) This, according to Crosser, is the essence

of state capitalism. He traces the development of subsidization practices and the resulting privatization in the use of tax money, through Chapters 1 (industrial production), 2 (foreign commerce), and 3 (agriculture).

Tax revenues earmarked for defense contracts are equivalent to the amount of the annual net private capital formation. Thus, as far as capital formation is concerned, private enterprise can be said to be "state financed." Crosser suggests that costs and prices affecting defense contracts are manipulated to provide excessive risk premiums, not just as an insurance against unexpected cancellations, but as a cushion against the unpredictability of the market in the peace-goods sector of a corporation. The use of tax money for this purpose is highly discriminatory to business engaged exclusively in peace-goods production. This is far more pronounced in foreign commerce, where a series of Congressional acts provided funds for disposal of surpluses, guarantees for investments, and thus created a climate for privatization of U.S. public funds, affecting not only private enterprise in the United State, but foreign as well. Crosser would have strengthened his case considerably, if he had included references to related source material (for example: renegotiation proceedings, examinations of write-offs, as well as hidden subsidies which, when they do come to light, offer some interesting revelations).

Crosser assumes that, since the issue of nationalization still dominates public opinion in Western Europe, the realization that "private enterprise cannot maintain itself without the assistance of public funds," would lead to renewed demands for nationalization. However, to cite only one example, the "new look" acquired by the German trade unions is an indication of a changed attitude. On the other hand, this reviewer found a most scathing criticism of subsidization practices in Germany, in the old-line liberal (strongly antinationalization) *Frankfurter Allgemeine*. Sarcastically entitled *Labyrinth der Liebesgaben* (*Liebesgaben* originally meant gifts to soldiers at the front), the article shows that almost half of the German tax money goes into subsidies. Reading the list of the favored recipients, would stump even a Laporello. One thing is certain, the United States has no monopoly on state-capitalist practices, as defined by Crosser.

In the concluding chapter, Crosser outlines a theoretical framework for the interplay of socio-economic forces (conflict of interest, domination by privileged groups, internal balance of power), and suggests alternatives suitable to a pluralist society.

FREDERICK SETHUR

The City College of New York

Central Planning in Czechoslovakia. By JAN M. MICHAL. Stanford: Stanford University Press, 1960. Pp. xii, 274. \$5.75.

The subtitle of this study, *Organization for Growth in a Mature Economy*, emphasizes the important relationship between the problems of planning and of economic maturity. In a period when opportunities for investment have become less obvious than in the decades of rapid population increase, a plan may make these opportunities more clearly visible and allow the continua-

tion of what may be called extensive growth on something like the nineteenth-century scale. Unplanned mature economies, on the other hand, have to compensate for a loss in depth of capital-use by a gain in breadth; and the substitution of intensive growth for extensive growth may not be adequate in a system in which the course of economic development is uncharted.

The Czech experience with central planning appears to the author to be particularly instructive, because the problems which planning is intended to solve originate more from a high state of industrialization than from economic change as such, and they are consequently more directly comparable to similar problems in the market economies of Western Europe and the United States. The progress of a mature, centrally planned economy makes it possible to reach conclusions as to the optimum combination of extensive and intensive growth that can be reached in such an economy and as to the comparative economic efficiency of mature market and centrally planned economies. Czechoslovak planning provides, furthermore, a demonstration case for the continuation of extensive growth made possible by (hidden) economic aid through international trade, which has the same function as had colonial dependencies or land reserves still to be settled in the nineteenth century. What unplanned market economy granted in 1956-57 low-interest, long-term credits amounting to \$40 per head of its own population?

The foregoing considerations are implicit in the author's collection of statistics and the general information which he provides on Czechoslovakia's economy. In his presentation, "the stress is placed on statistical tables rather than on the text" (p. 4). He examines the different sectors of the economy in ten chapters similar to the arrangement in the Czechoslovak Statistical Yearbook. A chapter on population and manpower, mainly containing demographic data and carefully avoiding any discussion of labor issues, is followed by chapters on industry, construction, agriculture, and transportation, the main activities producing national income in the Marxist sense. The discussion of Czech external trade, the core of the work, attempts to gauge the development of the country's terms of trade and its contribution to foreign aid by the bilateral external trade net subsidies. The chapter on money and prices offers a factual outline of currency manipulations and of some of the difficulties arising when planned production rather than costs determine the output level. The resource allocation process is set forth in an account of the state budget and investments. The chapter on population, incomes, and the standard of living supplies a number of indicators of the material welfare of the Czechs, not excluding mass leisure facilities; and the last chapter tries to assess national economic capacity by reviewing the growth of national income and expenditure since 1948, adjusted for the estimated achievements of the "non-productive" sectors. Results of the 1959 plan, the project for 1960, and the targets of the third five-year plan are given in an appendix.

Most aspects of the Czech economy are systematically compared in the statistical tables with the market economies of Austria, West Germany, France, the United Kingdom and the United States and the planned economies of East Germany, Poland, Hungary, the Soviet Union, and Yugoslavia. There is, unfortunately, no comparison with the prewar growth of the Czech

economy. Few prewar figures are in the tables, and the narrative altogether lacks historical perspective.

Another shortcoming of the volume is the frequent paraphrasing of statistics without much interpretation. Dealing with Czech investment policies, the author candidly states that "as in most of the other chapters of this book, the comments will be compressed into a descriptive framework, telling what happened . . . rather than why it happened" (p. 172). This reticence with regard to interpretation is surprising inasmuch as Michal is convinced of the basic reliability of Czech statistics. A more extensive qualitative assessment could also have taken into account the fact that national income fails to measure adequately the change in output over time because of the index-number problem and because the private sector in agriculture is not taken into account.

The sketchiness of explanation, furthermore, goes along with a vagueness in theoretical framework. It is one thing to state correctly the calculation of the commodity terms of trade; it is another thing to give this calculation significance in view of the unrepresentativeness of Czech export prices and deliberate underbidding in foreign markets. Some elaboration of Czech foreign commercial policy and the role intended for the country by the Council for Mutual Economic Aid would seem to have been required. The limited theoretical interest of the author is also evident in his narrowly pragmatic accounting for failures to fulfill the plan. Thus "inexperienced personnel" stands for methodological inconsistencies in planning. Some attention to recent Czech and Polish theoretical deliberations, which seem to have supplanted the scholastic tone of an earlier period, would have provided a better basis for understanding Czech self-assessment of planning achievements.

Michal, a consultant to the Stanford Research Institute, provides us with a valuable source of selected social and economic statistics. He clearly realizes that his approach, "limited to a description of economic developments in a rather narrow materialistic sense" (p. 243), does not provide a definitive evaluation of planned growth in a mature economy.

PAUL J. MEIER

University of Massachusetts

Business Fluctuations

What You Should Know About Inflation. By HENRY HAZLITT. Princeton, N. J.: D. Van Nostrand Co., 1960. Pp. vi, 152. \$3.50.

Henry Hazlitt states in the preface to his latest book that it is offered for readers who have asked for "a brief and simple exposition of the causes and cure of inflation" plus "advice . . . they [can] follow personally to prevent further erosion in the purchasing power of their savings." The book consists of 44 very brief chapters totaling 152 pages; as Hazlitt notes, most of the material originally appeared in his *Newsweek* articles. Only about five pages deal with the second of the stated aims from the standpoint of an individual with no influence on public policy.

As readers acquainted with Hazlitt's opinions will anticipate, the book

constantly emphasizes the virtues of the free enterprise system. Although not referred to by name, the long-run quantity theory of money is the chief tool in Hazlitt's analysis of inflation. (Hazlitt usually couples "money" and "credit" ambiguously with no attention to the difference between these two concepts; in this practice, however, he is not out of step with much monetary literature.) Keynesian ideas make no appearance. In brief, what Hazlitt thinks the reader should know about inflation includes: (1) Inflation penalizes thrift, encourages gambling, and in many other ways undermines the free enterprise system. (2) Increases in the supply of money are essentially the only cause of inflation. (3) Increases in the money supply occur solely as a result of government action. (4) Willingness to restore the gold (coin) standard is probably a necessary and sufficient condition for halting inflation—a long section of the book examines this topic and how to achieve the return without deflation. (5) There is not or should not be any real conflict between price stability and other objectives. Wartime finance receives no explicit attention. The role of war in generating inflation is de-emphasized. By the close of the book Hazlitt has discussed the consequences of continuous creeping inflation (bad in itself, a self-defeating, ultimately ruinous policy once the public anticipates continuing inflation), the wage-price spiral (impossible without increases in the quantity of money), selective credit controls (discriminatory and no substitute for general control), and many other topics. Slichter and several others receive harsh, sometimes not wholly unfair, criticism.

On the conflict between price stability and high employment and growth, Hazlitt asserts both (1) that there is no conflict (p. 95), and (2) that unemployment is serious, but "it hardly justifies reckless deficit spending or further dilution of the dollar in an effort to cure it. We could more profitably look, in times of abnormal unemployment, at the relation of key wage rates to prices and consumer demand" (p. 110).

What can one fairly say about this? The book has several virtues. Hazlitt wages war on sloppy thinking regarding incentives and inconsistencies in public pronouncements (for example, in the *Economic Report of the President* for January 1959). He draws attention to essentially all the possible undesirable consequences of inflation. His analysis of many topics is correct. But Hazlitt goes too far. The book comes in the end to an implicit exposition of Hazlitt's values with no reference to other, widely held values and a misleading portrayal, moreover, of the state of economic knowledge. For example, professional economists' knowledge concerning the probable price level-unemployment combination resulting from adoption of Hazlitt's recommendations is very limited. The book gives no instruction on this point or its connection with conflict in the political arena. Other sources will be required, consequently, if a reader is to gain any understanding at all of why we have not yet chosen to completely "cure" inflation.

H. LAURENCE MILLER, JR.

University of California, Los Angeles

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

Bank Deposits and Legal Reserve Requirements. By FRANK E. NORTON and NEIL H. JACOBY. Los Angeles: University of California Press, 1959. Pp. xiv, 139.

This study, aptly subtitled in the Smithian tradition, "A Study of the Legal Reserve Requirements of the Federal Reserve System in the Light of the Composition and Behavior of Deposits in Member Banks of Different Sizes, Locations, and Forms of Organization, Including Individual Offices of Branch and Unit Banks" was undertaken by the authors in 1955 "to appraise the [present] system and some alternative systems of determining the legal reserve requirements of individual member banks."

The authors, who indicate a high degree of familiarity with the institutional aspects of commercial banking as well as with current monetary theory, analyze the propositions that the tripartite classification of commercial banks and the differential reserve requirements, as originally established under the National Banking System modified under the Federal Reserve System, are neither consistent with efficient private management of commercial banking institutions nor compatible with effective monetary control. Recognizing that the establishment of rational reserve requirements of individual member banks must be consistent with efficient bank management and effective monetary policy, the authors analyze the problem from a historical and a theoretical basis. In addition, the study brings hitherto undeveloped and unpublished statistical evidence to bear upon the problem.

After a short, concisely written introductory chapter in which the nature, purpose and methodology of the study are clearly described, the authors present in Chapter 2 the historical evolution of legal reserve requirements for state as well as national banks. Of special interest to monetary historians, particularly in light of relatively frequent variations in legal reserve requirements of the recent past, is to recall that reserve requirements for national banks remained unchanged for the threefold classification of member banks from June 21, 1917, to August 16, 1936. Clearly indicated in the study are the dynamic nature of commercial banking and the necessity to institute regulatory practices which are consistent with the changing role of banking institutions in the U.S. economy. Thus, the shift in the institutional organization of commercial banking from a paper-money banking system with its emphasis upon liquidity to provide convertibility to deposit banking accomplished by the monetization of debt instruments and the utilization of legal reserve requirements as a necessary and desirable tool of monetary policy is aptly described. The administrative lag on the part of the supervisory authorities in developing a reserve requirement structure consistent with nondiscriminatory private bank management and modern commercial bank practice rather than with the institutional organization of commercial banking under the National Banking System is also clearly demonstrated.

In Chapter 3, entitled "Economic Analysis of Legal Reserve Requirements," is presented an extremely concise and cogent review of current legal

reserve requirements and their economic implications. In the words of the authors (p. 49), "the only theoretically valid criterion of reserve requirements is some measure of a bank's proportional contribution to the aggregate demand for national product . . . Consequently, it is necessary to relate reserve requirements to deposit turnover." Thus, current and previously suggested alternative bases for the establishment of a legal reserve requirement structure are considered and rejected as not compatible with the criterion established. Among those bases eliminated are the geographic location of the banking office, the contractual duration of deposits, the business of the depositor, and the variability of deposit balances over time.

A large part of the monograph (Chapters 4-6) is concerned with a systematic investigation of the relationships among deposit turnover, composition and size of deposit balances on the one hand and the location, form of organization and size of banks on the other hand. On the basis of the analyses of the relationships among the principal variables and the utilization of statistical techniques consistent with the availability and quality of the data, the authors conclude that the present reserve requirements per dollar of demand deposits are not proportional to the average annual rate of turnover of demand deposits for banks taken as a group in each of the present threefold geographic classes. They conclude that the most valid means of distributing reserve requirements among individual banks would be on the bases of both the amount and the rate of turnover of their demand deposits; and further that the size of a bank, as measured by its total deposits, correlates better with its deposit turnover than does its location or form of organization.

Granting the importance of administrative inertia, perhaps one of the reasons for the lack of reform in legal reserve requirements has been the inadequacy (or total absence) of empirical evidence which would substantiate modifications in regulatory practices. Although this study was based in part upon 1951 statistical data, current evidence indicates that not only would the effectiveness of monetary policy be enhanced, but the efficiency of the administration of bank assets would be improved through the substitution of a deposit turnover classification for banks of similar deposit size for the existing geographic classification.

Conclusions developed in this study give theoretical justification for the recent (August 25 and September 1, 1959) authorization to country banks to count vault cash in excess of $2\frac{1}{2}$ per cent of net demand deposits in meeting their reserve requirements. Previously, they could count such cash in excess of 4 per cent. Central reserve and reserve city banks were authorized to count vault cash in excess of one per cent of net demand deposits instead of the previous 2 per cent in meeting reserve requirements. In addition, this study provides a firm foundation for the passage of the 1959 law which provides for the elimination of the reserve requirement differential between central reserve and reserve city member banks by 1962. However, the inequitable reserve requirement discrimination against "outlying banks" and branch banks maintaining head offices in metropolitan areas still exists.

The unique contribution of this excellent study is found in the skillful utilization of the historical, theoretical and empirical approaches to the de-

velopment of a solution to a long-standing problem in the administration of legal reserve requirements. In the opinion of this reviewer, more research of this type should be encouraged.

This short, 139-page monograph, including appendix, may well prove to be of tremendous help not only to advanced students of monetary theory and bank administration, but also to monetary policy-makers.

LAWRENCE V. CONWAY

The American Savings and Loan Institute
Chicago, Illinois

Finanzreform. By WILHELM NEUBAUER. Vienna: Springer Verlag, 1960. Pp. ix, 378. \$6.65; paper, DM 5.70.

The subtitle calls this book a proposal for avoiding monetary disorders, for simplifying the tax system, and for rationalizing financing methods. Although specifically directed to the Austrian situation, the American reader may find the discussed proposals of some interest.

It is Neubauer's contention that business cycles may be explained in a monetary way. They may be controlled during deflationary periods by increasing the supply of money, and during inflation by a turnover tax, to stop inflationary pressures. A combination of these two methods is all that is needed for combating the business cycle.

To make such action effective, decisions on both monetary and tax matters would have to be made in a Government Currency Office with the assistance of economic advisory councils, bodies which would also represent the consumers, among others. Such an office would have to abandon any fiscal rationale behind taxation, and rather see in the turnover tax a powerful means for regulating the supply of money so that business cycles could be flattened out. The sole supply of funds for the public economy (in addition to the turnover tax revenue) would come from printing an additional supply of money without regard to any limitations inherent in reserve requirements or gold stocks. The only limit would be the maintenance of a stable economy. In such a way the public economy no longer would depend on borrowing. The government also could abolish all methods of self-financing and substantially reduce all public prices (e.g., tolls). This would be a simple way of financing everything, and as the author says, it would spur production, improve the standards of health and strengthen the working potential of the population.

Taxes generally restrict supply, rather than demand for goods, since they contribute to a rise in prices, the author contends. The goal of any governmental policy, therefore, should be a simplification of the tax system. Most taxes could be abolished. This is especially true of the income tax, the progressive rates of which restrict the individual's freedom, according to Neubauer. But also social security taxes, property taxes and the host of other taxes could be discarded, since they no longer would be needed for revenue purposes. The central remaining tax would be the turnover tax. The rate of this tax would increase with the inflationary pressures and decrease during deflation. Some differentiation of rates could be made depending upon the

kind of transaction taxed. Perhaps in addition to the normal rate a reduced rate for mass consumption products and an increased rate for luxury goods would suffice. Some production, e.g., agriculture, could be completely exempted from the tax. Neubauer emphasizes that the Soviet Union uses the turnover tax to such an extent, that only 7.8 per cent of the state budget was covered by direct taxes during 1958. It is possible that additional taxes could be related to the turnover on real property and on stocks, such as a tax on land rent, in line with Henry George's proposals.

A reduction of the tax structure would also result in a great simplification of the governmental machinery and, as the author contends, even make possible a reduction in administrative personnel.

The goal of the proposed reform is what the author calls either social liberalism or a free communal economy (*freie Gemeinwirtschaft*). It is the accomplishment of welfare-state goals without a multiplicity of taxes. It is also the accomplishment of socialism without using socialistic methods. The system may be used not only within a single country, but may be expanded internationally by an abolition of tariffs, by removal of restrictions on the movement of peoples, and by introducing a genuine world parliament instead of the present restricted United Nations.

It has been necessary to give a rather lengthy summary of the book's contents, since it contains many unorthodox economic ideas. What strikes the reviewer is first and foremost the emphasis on a single cause of the business cycle—money supply. Then, it is interesting to note that Neubauer continuously states that his reform proposals are made in the name of freedom, yet increased state controls are quite obviously present in the proposals. How should these two be combined? And will the turnover tax really be as effective as it is envisaged? Would the currency office really restrain itself in the printing of money?

The shortcomings of the book are quite evident. If one adds the lack of a bibliography and a scarcity of footnotes (rather old sources at that), these shortcomings are further accentuated. Nevertheless the book still has value. Only marginal proposals, such as Neubauer's, allow one to see that multiplicity of taxes creates serious problems while providing revenues for the government, and that the lack of funds for the purposes of government may have serious consequences, as also shown recently in the writings of Bator and Galbraith. Within limitations, then, it is a stimulating book.

JERZY HAUPTMANN

Park College

Aspectos monetarios de las economías latinoamericanas, 1959. Mexico: Centro de Estudios Monetarios Latinoamericanos, 1960. Pp. 328. \$2.00.

This is the fourth of a series of annual reports by the Mexican Center of Latin American Monetary Studies, and the most extensive so far—though not by virtue of its length the richest in new material of value to the foreign observer of developments south of our border. Nearly one-third of the space is taken up by the first chapter, a lengthy review of world economic developments. This kind of information is available in other sources, particularly the

United Nations Economic Commission for Latin America, and in rather more timely fashion. Nonetheless it is perhaps not useless for the reader to be reminded of the slowing, in some countries a near-stagnation, of economic growth, related to a gradual erosion of exports and the capacity to pay for imports over the last several years.

The second chapter, as customary in these surveys, deals with internal monetary developments. The period under review is interesting because it affords a preliminary evaluation of a number of stabilization programs that were initiated with the assistance of the International Monetary Fund, often in combination with official and private capital provided in the United States and in Europe. Among the case sketches Argentina, Chile and Peru are of special interest in view of their close economic relations with the United States. The success of their stabilization experiences may well also be decisive for the future attitude of other countries fated to follow in their path. The most important hold-out is, of course, Brazil, which has so far balked at the austerity demanded in return for stabilization assistance. The CEMLA survey's authors—staunch supporters of monetary virtue, no doubt—do not flinch at hinting at the social cost of stabilization and the very real danger of stagnation in its wake, unless determined efforts are made to move the “tranquillized” economy off dead center again.

The third chapter on external monetary matters is a recital of events concerning the region's balance of payments and international loans without which the shrinking volume of imports would have been even more grievously affected. This section overlaps parts of the first chapter. It concludes with a review of developments in the field of exchange rates, payment and commodity agreements, specially in the case of coffee.

The fourth chapter at first promises to be analytically the most interesting fare though it soon proves to be rather too ambitious. Using a theoretical model set forth by Robert Triffin at the Fifth Meeting of Central Bank Technicians in Bogota in 1957, it presents for sixteen countries the evolution of national expenditure and how it was financed—in real terms and through price changes—internally by credit monetization and externally by capital flows and reserve movements. An interesting concept and a bold experiment, no doubt, but one that succeeds or fails in direct proportion to the quality of the statistical input. Anyone who has attempted to evaluate the national income estimates and other material in economically—and statistically—less developed countries can hardly fail to be intrigued and puzzled by the confident presentation of such a mass of data in no less than 48 tables. Although this reviewer does not feel qualified to pass judgment on the numerical validity of the results, he has to confess to a great deal of uneasiness about the impression of excessive precision that is only partly allayed by the authors' commendable urging of caution.

On the whole, except for the pioneering last chapter—a move towards a still rather dimly perceived statistical frontier—the survey is analytically rather bland. This may be due to a change in authorship of this volume—by Miguel S. Wionczek and Juan M. Brich—compared with the earlier and partly more problem-oriented annuals by Theodore A. Sumberg. But it con-

tains many incidental sidelights and insights that are not without interest to an American reader willing to winnow them from the less original mass of material.

HENRY G. AUBREY

New School for Social Research

Public Finance; Fiscal Policy

Personal Deductions in the Federal Income Tax. By C. HARRY KAHN. Princeton: Princeton University Press, for National Bureau of Economic Research, 1960. Pp. xxix, 237. \$5.00.

Income Tax Exemptions. By MICHAEL E. LEVY. Amsterdam: North-Holland Publishing Co., 1960. Pp. xii, 148. \$4.00.

Professor Kahn and Dr. Levy are both concerned with procedures employed in the definition of the personal income tax base. Both are concerned with the effect of these tax conventions on incentives and the distribution of taxes. Yet there is little similarity between the two works. Kahn's volume is basically an examination of changes through time in the statistics for those deductions which have been allowed under the federal income tax law. Levy's monograph is a theoretical study of exemptions as a genus of tax conventions, and it contains little reference to U.S. historical experience. Therefore they will be treated separately.

The primary purpose of Kahn's work is the description of the quantitative significance of personal deductions reported on income tax returns in the United States from 1919 to 1956. His major source of data is the annual pre-audit figures of the Internal Revenue Service as published in *Statistics of Income*. Yearly data are presented for total deductions and deductions by type both in absolute terms and as proportions of adjusted gross income. Data for the distribution of total and individual deductions by income class are also given. Some data on exemptions are presented in order to establish the relative importance of deductions over the period studied. Separate chapters are devoted to each of the major individual deductions: philanthropic contributions, nonbusiness taxes, personal interest payments, medical expenses, and the standard deduction.

Kahn's data show that there has been a slight increase in the ratio of total deductions to total adjusted gross income. The introduction of the standard deduction in the 1940's seems a major factor in the explanation of this change. The data also indicate that over the business cycle, the proportional change in the volume of deductions is less than the proportional change in adjusted gross income. The system of deductions has thus contributed somewhat to the built-in flexibility of the fiscal system. Another finding of interest concerns the distribution of deductions by income class. Prior to the second world war the ratio of deductions to income tended to increase with the level of income. More recent data indicate that the lowest ratios of deductions to income are found in the income classes falling in the \$10,000 to \$50,000 per year range. While the change in the ratio of total deductions to adjusted gross income has been slight, the shift in the distribution of deductions by type seems

to have been considerable. Evaluation of these trends is made difficult because most of the deductions taken by the lower-income classes is now taken in the form of the standard deduction. Subject to this major limitation it appears that the deduction for personal interest is less important now than in the 1920's while there has been an increase in the relative importance of the deduction for nonbusiness taxes.

Kahn also discusses the apparent motives behind legislative enactment of individual deductions. We are reminded that some of the deductions were intended to refine gross income to economic net income. Others were intended to further refine economic net income to a measure of the ability to pay. The provision for deduction of philanthropic contributions seems particularly based on the hope that the provision will encourage private support of socially desirable activities, some of which are close substitutes for government action. Has the deduction encouraged philanthropy? More to the point, has the loss of tax revenue exceeded the volume of additional contributions to those institutions which provide services which the government would probably want to maintain in the absence of philanthropy? Since these are two of the most important economic questions relating to the system of deductions, Kahn's conclusions deserve discussion. He avoids a definite answer to these questions but seems inclined toward the conclusion that philanthropic contributions in the aggregate are insensitive to tax incentives.

On the basis of independent estimates of the volume of philanthropic contributions Kahn has found that the ratio of total contributions to total income has remained stable through time. He recognizes, of course, that this is no evidence that the tax incentive has been ineffective. Kahn's major argument against the hypothesis that the volume of contributions is sensitive to the price of giving is his finding that the introduction of the standard deduction did not change the ratio of total contributions to total income.

This argument is not convincing. Kahn has found that the ratio of contributions to income for taxpayers who itemize their deductions has been stable and higher than the estimated ratio for all taxpayers. The aggregate contribution ratio has remained constant. Since the proportion of taxpayers who have chosen to itemize deductions has increased substantially through time, it can be inferred, therefore, that the contribution ratio for taxpayers who have used the standard deduction must have fallen through time. This does not prove that such taxpayers have proved sensitive to loss of the tax incentive. With time an increasing portion of the group which has chosen to use the standard deduction has come from the lowest-income classes. Since the ratio of contributions to income increases with relative income, it might be argued that this inferred decrease in the contribution ratio of taxpayers using the standard deduction represents a relative-income effect. If this is the case, however, why has the contribution ratio of taxpayers who itemize not decreased? May not the explanation be that contributions have proved somewhat sensitive to the tax incentive? Kahn's data show that the ratio of reported contributions to income has increased for persons with yearly income in excess of \$10,000. It is possible but not certain that the contribution ratio for persons in the income range of \$5,000 to \$10,000 per year has increased, since contributions made by individuals in this group who used the standard deduction can be estimated only roughly.

It is likely that the incentive (and disincentive) effects of taxation on philanthropic contributions have been very mild for the low-income groups, although Kahn has not proved this. When considering the justification for the deduction, it should be remembered that the revenue loss from this deduction does not come primarily from those low-income groups for which we have the most reason to expect little response to the incentive, since these taxpayers are predominantly users of the standard deduction. The deduction for contributions would be harder to justify if the standard deduction did not exist.

Kahn also suggests that a tax credit for contributions might be preferable to a deduction. Again, his analysis is sketchy. Kahn's data show that the upper-income classes contribute relatively more to those institutions that are particularly engaged in the production of services which are close substitutes for government action than do the low-income groups. It seems fair to ask whether it is desirable to eliminate the present discrimination in favor of those philanthropies which, on grounds other than simple equity, the government has most reason to support.

Kahn has provided a convenient summary of the statistics on tax deductions. We are reminded that the deduction system has not resulted in any noteworthy change in the aggregate tax burden or the schedule of effective marginal tax rates. The principal effect of the deductions has been the redistribution of taxes from those with more than average deductible expenses to those with relatively small deductions. Thanks to Kahn, we know something more about the importance of this redistribution.

Levy's volume is thinner in size and intent. The announced purpose is the provision of a systematic analysis of the impact of exemptions from the income tax on the average effective tax rate, the degree of tax progressivity, and the incentive to work. Levy's initial concern is with both vanishing and continuing exemptions, but examination of the various types of exemptions with respect to a set of tax criteria (Pigou's criteria amended) prompts him to concentrate his analysis on the continuing exemption. There is no discussion of the value judgments upon which the tax criteria depend.

The analysis of the effect of exemptions on the average effective tax rate and the degree of tax progressivity is likely to strike the nonspecialist as tedious. A discussion of the change through time in the distribution of taxes in the United States as related to changes in the importance of the standard exemption would have been welcome here. The reduction in the ratio of exemptions to total adjusted gross income from 73 per cent in 1918 to 33 per cent in 1955 indicates the order of significance of this change. The portion of Levy's work most likely to be of some interest to the nonspecialist is his theoretical discussion of the effects of alternative changes in the tax structure on the incentive to work. His conclusion is that an increase in the standard exemption of sufficient magnitude to shift a large part of the tax-paying population into a lower marginal-tax bracket is more likely to increase the incentive to work for individuals earning medium or high incomes than is an across-the-board reduction in rates by an absolute percentage that leads to the same revenue loss.

ROBERT L. SLIGHTON

Stanford University

Public Finance and the General Welfare. By TROY J. CAULEY. Columbus: Charles E. Merrill Books, Inc., 1960. Pp. xvi, 398. \$5.95.

This textbook covers the usual range of subjects organized conventionally in sections treating the nature of government finance, public expenditures, revenues, debt, and finally fiscal policy. Professor Cauley has condensed the material into fewer pages than is usual for a textbook in public finance. The curtailed treatment results in frequent generalizations undeveloped in detail.

The brevity of the book should make it especially useful as a text to an instructor using extensive supplementary readings. The author provides guidance to the student seeking added explanation of the subject in each chapter by a well-chosen list of recommended readings and by a series of questions for discussion demanding analysis and knowledge reaching well beyond the presentation in the text. Indeed, Cauley writes for two distinct levels of understanding. An intelligent reading of his elementary descriptions of government finance requires considerably less background in economics than does a comprehension of his recommendations for tax reform and fiscal policy.

Considering its brevity, the book is remarkably complete. But certain aspects of public finance sometimes included in introductory texts are omitted. The emphasis is on federal finance, except in the chapter on intergovernmental fiscal relations. Little attention is given to the pressing problems of local finance in large metropolitan areas. The significance for fiscal policy of the concept of the cash budget as opposed to the administrative budget is not elaborated. The book treats exclusively the public finances of the United States, with few international comparisons. Taxes not used in the United States such as the capital levy, the net worth tax, and the expenditures tax are not discussed. The history of the theory of public finance is omitted. At the same time, other subjects unnecessary in a textbook designed for the student who already has completed an introductory course in economics are included—for example, the measurement of national income and the operation of the banking system. The charts in the chapter on the theory of incidence would be more effective if accompanied by a fuller interpretation of them in the text. In subsequent printings of this book, the apparent errors in drawing Figures 6-3 and 6-4 should be corrected.

Cauley does not restrict himself to objective description. He often adds to the factual presentation an evaluation with recommendations for improvements. To illustrate: He concludes his chapters on the personal income tax with proposals to tax capital gains as income after adjustments for capital losses; to adopt a system of averaging income through time; to allow larger personal exemptions for taxpayers in the lower than in the higher income brackets; to provide in computing the tax for the depletion of human resources; and to reduce the special depletion allowance for oil. He concludes the book with "Some Suggestions" among which is a proposal of an adaptation of the escalator clause to the personal income tax to produce a variation in the rates of the tax with a price index and with the volume of unemployment.

Throughout the book, Cauley emphasizes the general welfare. His chief criterion for judging the contribution of the fiscal system to the general wel-

fare is its "functional adequacy" in achieving full employment and stable prices. He expresses his debt to J. K. Galbraith for his concept of "social balance." In the section on fiscal policy, he gives approximately the same space to the control of inflation as to the control of depression, although he is less hopeful of success in combatting inflation.

Cauley has written a readable text which should stir the interest of students and lead them to look further for additional information and theoretical tools. Its very shortness may give it an advantage in this respect over a more cyclopedic text.

MARION HAMILTON GILLIM

Barnard College, Columbia University

International Economics

Economic Consequences of the Size of Nations. Proceedings of a Conference held by the International Economic Association. Edited by E. A. G. ROBINSON. New York: St. Martin's Press, 1960. Pp. xxii, 447. \$10.00.

Do large countries have an economic advantage over small ones? The quick and intuitive answer to this question is, "Of course." But after thorough study and consideration, the economists whose essays on this topic were presented at the 1957 Conference of the International Economic Association were not sure at all. Most of them ended on a note of "Maybe—maybe not."

Nevertheless, although the initial consensus about the disadvantages of being a pigmy fades under a barrage of special considerations, varying points of view, and different frames of references, the point is not entirely lost. If a simple summary can be given for so heterogeneous a group of theoretical papers, it is that there are economic advantages to being a large nation—but that they arise from political, institutional or strategic factors rather than strictly economic ones. And this conclusion finds support in many of the independently prepared case studies of large and small individual countries which are also presented.

For example, the papers by J. Jewkes and Corwin Edwards, concentrating on economic factors alone, both deny that the size of nations affects the efficiency of the firm. Jewkes finds that, though the industrial nations of the world enjoyed a good record of economic growth in the interwar period, the average size of manufacturing firms (measured by number of wage earners) did not increase significantly. This leads him to believe that the optimum size of factories is rather small, irrespective of the size of nations, and that economic growth finds expression, instead, either in a proliferation of new firms which take on specialist functions in the productive process or in the diversification of existing firms. (This finding is echoed in Sol Fabricant's study of the U.S. economy.) Corwin Edwards continues this analysis by adding that specialist firms and large integrated companies both may establish in small countries if their foreign markets are assured. Thus he also denies that national boundaries necessarily have an economic effect—unless they represent trade barriers imposed, for political or strategic purposes, by a national government or by a cartel.

This same point is made, though in a different way, in the paper by Tibor Scitovsky. He presents what one might call the conventional case for economic integration: that larger markets encourage firms not only to specialize and to increase their output at lower unit costs, but also to compete in a geographically larger area at lower prices. Although the classical argument for free trade among sovereign nations is couched in exactly the same terms, Scitovsky rejects it because he believes that export trade, which depends on political as well as economic motivation, is too unreliable to encourage much dependence on it.

Robert Triffin's discussion concentrates on the problems of trade controls, and he states the argument for economic union most pointedly: Foreign trade does not really substitute for economic integration because, contrary to the expectation of classical writers, modern national governments do (in emergencies) pursue trade policies which discriminate against countries with inferior bargaining power. Thus small countries find their interests better protected in economic integration, and they have spearheaded the drive for progressively more comprehensive agreements to achieve it—first Benelux, then the European Payments Union and the Coal & Steel Community, and now the Common Market and the Free Trade Area.

Not all of the analytical papers concern themselves with this single issue. Some of them discuss other problems that concern small nations—their relative stability, their chances of development, their efficiency in administration, etc.—and in a number of cases they find their observations confirmed by the evidence developed in individual country studies. Simon Kuznets, who relates the successful economic development of many small countries to internal coherence, adaptability to external change, and close commercial ties to other countries, has his argument neatly illustrated by W. A. Joehr and F. Kneschaurek in their study of Switzerland. On a more theoretical level, Lorie Tarshis reasons that a small country is best insulated against business cycle fluctuations abroad if the income elasticity of demand for its exports is small. This conforms to L. Pinto's finding that one of Portugal's problems is the nature of that country's exports: they consist largely of nonessential items like port wine and canned fish. As a final example, E. A. G. Robinson suggests that there are economies of scale in the cost of government. Though his own international comparisons do not confirm this hypothesis (because, one suspects, different governments establish widely varying criteria for the social, economic and military services which they provide), his view receives support in W. Prest's study of the Australian experience. The governments of large Australian states actually subsidize the small ones in the interest of uniform standards for public programs throughout the nation.

Collectively, the nineteen papers suggest a myriad of relevant factors which should some day be ordered and integrated into a conclusive theory of the size of nations. This is a task left for the future. In the meantime, though so diverse a group of authors is bound to differ on exactly how to evaluate it, at least we know now that the advantage of large nations over small ones is positive.

G. H. MATTERSDORFF

New York, N. Y.

**Industrial Organization; Government and Business;
Industry Studies**

Mergers and the Clayton Act. By DAVID DALE MARTIN. Berkeley and Los Angeles: University of California Press, 1959. Pp. xii, 351. \$6.00.

Textbook coverage of the administration, interpretation and eventual amendment of Section 7 of the Clayton Act usually assumes that its early ineffectiveness in curbing mergers resulted largely from a failure to word the statute so that mergers brought about through an acquisition of assets could be included among the proscribed business practices. Thus the Supreme Court of the 1920's and 1930's, already inclined toward tolerance of "reasonable" concentrations of economic power, had little difficulty in nullifying Congressional intentions when presented with the loophole which this crucial omission provided. The evidence marshaled in Martin's detailed study does much to modify this point of view in at least two respects: (a) the Federal Trade Commission, as much or more than Congress and the Court, must bear responsibility for the emasculation of Section 7, and (b) the "assets loophole" was not, in fact, the primary curb on FTC antimerger activity.

Congressional concern in writing Section 7 primarily reflected a suspicion that holding companies might come to exercise monopoly control over competing firms through the acquisition of stock by means that were secret, or at least unnoticed in the tangled web of corporate financial structures. Congress therefore sought only to prohibit stock acquisitions, and these only where the effect may be to substantially lessen competition between the corporation making the acquisition and the corporation whose stock was being acquired. This standard of illegality could be interpreted in either of two ways, however: (a) an acquiring firm "substantially lessened" competition between itself and the acquired firm by the very act of acquisition, for this eliminated any competition between them, or (b) a "substantial lessening" of competition could take place only if "substantial competition" had existed between the acquired and the acquiring firms prior to the acquisition. The case against the FTC for its handling of Section 7 starts from the finding that it chose the second alternative interpretation, whereas Martin concludes that Congress really intended that the first interpretation apply (p. 146). Although thus conceding that a substantial lessening of competition could take place only if substantial interfirm competition had existed earlier, the FTC failed to develop any objective criteria to determine what constituted "substantial competition." In the face of this failure, the Court supplied its own criteria (the *International Shoe* case of 1930), which, given the times and the temper of the Court, inevitably meant a retreat to the Sherman Act tests of reasonableness it had forged in other contexts.

The FTC therefore found itself unable to act under Section 7 except in cases which would also have constituted Sherman Act violations—a situation which the Clayton Act was supposedly designed to remedy—but the resulting loss of initiative may have been a mixed blessing of sorts. Since the FTC had failed to develop standards of illegality which rested on economically meaningful considerations, in the absence of judicial review the FTC would have "... (1) prohibited many mergers between competitors, even if they

might result in an increase in competition in a market, and (2) permitted many mergers involving firms not previously in 'substantial competition' with each other, even if they might result in a substantial lessening of competition in a market" (p. 196). This is perhaps understandable for the early years after passage of the Act, when a legalistic, as opposed to an economic, approach to antitrust was at its height. It is quite unexpected, however, to find that in its recommendations for legislative amendment during the period up to 1950 the FTC still seemed largely unaware of a fundamental source of its difficulty in applying Section 7—the manner in which it had chosen to define a "substantial lessening" of competition, and the corresponding failure to approach the merger problem by the application of meaningful economic criteria. A survey of 121 investigations made by the FTC over the period 1932 to 1938 sums up the situation succinctly. It shows that "... the so-called 'assets loophole' was not the primary limitation on the commission's ability to prevent mergers; the interpretation given the standard of illegality of Section 7 by the commission and the Supreme Court had prevented action against the acquiring corporation in most of these cases" (p. 186). Nevertheless, until 1950, FTC recommendations to Congress still dealt mainly with the "assets loophole," and Martin rightly underscores the conceptual blind spot this epitomized.

This exposition of the role played by the FTC in its attempts to administer Section 7, however, and some watering down of the "assets loophole" as the villain of the piece, mark the major contributions of this book, although important attention is also given the 1950 amendment. Martin believes the latter marks a major substantive change in antitrust policy by its recognition of market competition, rather than interfirm competition, as the important consideration, and is generally optimistic that its enforcement will be beneficial to the economy. The reader expecting a comprehensive grappling with the multifaceted problems presented by corporate mergers will be disappointed, however; for the book's approach is largely restricted to a historical review of the official record. The profuse use of lengthy quotations taken from FTC opinions, Court decisions, and Congressional hearings and reports provides ample, if frequently unrewarding, documentation for the history of the Act and its interpretation, but it also makes rather heavy going. This reviewer would have welcomed extensive condensation of this material, which takes up most of the book, to permit greater emphasis either on an analysis of the effects of the failure to apply Section 7 more vigorously (1914-1950), or on criteria to be applied in the administration of Section 7 as currently amended. The latter, for example, is dealt with in summary fashion only in a short final chapter on corporate mergers and antitrust policy. The bibliography, which presumably relates to problems of antitrust policy stemming from a concentration of economic power through mergers or otherwise, lacks any reference to the work of Blair, Nutter, Adelman or Bain, to mention some notable omissions.

In summary, this book provides an encyclopedic gathering together and presentation of Congressional, Court and Commission opinions, decisions and dicta relating to the original and amended versions of Section 7. Since it does

not go very far beyond this official record, it unfortunately does not contribute much to our understanding of the forces which shaped this body of opinion and administrative action, or of the economic consequences which may have stemmed from it.

JAMES B. HENDRY

Michigan State University

Broadcast Regulation and Joint Ownership of Media. By HARVEY J. LEVIN.
New York: New York University Press, 1960. Pp. xviii, 219. \$4.50.

Radio and television stations compete not only with each other but with newspapers, movies and magazines; this competition is, variously, for advertising revenue, for attention as sources of news and as sources of entertainment. Superimposed upon the web of intermedia interdependences is a pattern of ownership that crosses media lines—for example, there is at least minority newspaper ownership of 13 per cent of radio broadcasting stations and 35 per cent of television stations. Levin's objectives are to sketch the extent of this cross-media joint ownership, to ask if it is necessary, and (finding that it is not) to ask if it is in the public interest.

After a survey of the character, pattern and trend of joint ownership, Levin concludes that it is explained largely as a hedge against the inroads of broadcasting on older communications media. The case for separate ownership is then stated: in addition to the familiar list of potential abuses (among them deliberate retardation of competitors and use of tying contracts) there is the asserted advantage of pluralism of decision-making in providing news and in interpreting consumers' preferences. Levin recognizes that such an *a priori* case is unpersuasive if there are important economies of joint operation, if joint ownership is a prerequisite to financial stability, or if adaptation to new media will be more salutary with joint ownership than without it. Finding no strong evidence along these lines, the author concludes that joint ownership is against the public interest and in a final chapter reviews past policy decisions to find why, despite a nominal commitment to diversification by the FCC, it has occurred and to suggest ways of reversing the trend.

While this sounds reasonable enough, the whole seems to be not very satisfactory for the following reasons:

1. Levin relies, in the main, on the fragments of secondary data he can glean from one source or another; data that is generally inadequate and often badly out of date. He is aware of this and his conclusions are appropriately tentative. But the consequence is that the analysis is so partial and *ad hoc* as to be disturbing, and while the indirect evidence assembled is suggestive it is too thin to support much in the way of conclusions. Doing the best one can with inadequate data is not a substitute for a searching investigation.

2. Finding no compelling evidence against separate ownership, Levin assumes a compelling case for it. But does it really matter very much? The legal fiction that stations (rather than networks and sponsors) determine the performance of broadcasting is not very useful. More important, there is substantial reason for doubting whether a bias toward competition is sufficient policy direction in an industry where public service responsibility and com-

plementarity of programming are important attributes of good performance.

In short it is not clear that the basic character of U.S. broadcasting, nor the revolution in entertainment, communication and way of life wrought by the new media are significantly influenced by degree of joint ownership, or that they would be appreciably altered by a vigorous drive for diversification.

PETER O. STEINER

University of Wisconsin

Land Economics; Agricultural Economics; Economic Geography; Housing

Water Supply, Economic Technology and Policy. By JACK HIRSHLEIFER, JAMES C. DEHAVEN and JEROME W. MILLMAN. A RAND Corporation Research Study. Chicago: University of Chicago Press, 1960. Pp. xii, 378. \$7.50.

Water resource economists can be ranked according to the extent of their belief in the price mechanism. On this scale, a break comes with the acceptance or rejection of prices as indicators of social value. Some reject price-based criteria altogether, contending that social, intangible benefits of various sorts, including saving human life, regional development, creation of family farm opportunities, etc., are the real purposes of water resource projects. Most economists make the "leap of faith" to prices, but even among the faithful not all are equally orthodox. The authors of the present volume are fundamentalists.

Besides expositing the relevant chapters of classical economics and giving some necessary background on water supply technology, the book deals with three problems in the economics of water: pricing, investment criteria, and the legal structure of water rights; it provides, in addition, two case studies, water supply for Southern California and New York City. These five applications show both the strengths and weaknesses of the classical approach. Always interesting and incisive in the hands of such skillful practitioners, their analyses range from brilliant and convincing to quarrelsome and superficial.

To take the most successful first: the analysis of the plan for water supply for Southern California from the Feather River, complete with estimates of the cost of alternative sources, of the value of potential uses and of the loss in regional income to be expected from the state plan of development, shows that this plan will represent a considerable loss and that this multibillion dollar investment is being undertaken without a reasonable economic evaluation ever having been made by the authorities. The authors propose that Southern California first promote better utilization of existing resources by pricing closer to marginal cost, that it then use the cheaper sources available nearby, that reclaimed sewage be used for some purposes, and that the gigantic plan not be undertaken earlier than necessary, since a technological breakthrough, e.g. in salt water conversion, may obviate the need for the Feather River Project altogether. (The voters of California have endorsed the state plan by voting the 1.75 billion dollar bond issue necessary for the

first stage of construction of the aqueduct that would carry the water south through the state.)

In the New York City case, two alternatives competed, diversion and treatment of Hudson River water, and construction of a large reservoir on the Delaware in the mountains. Hudson River water would have been cheaper but of lower quality. The city built the reservoir because of the higher water quality and because it wished to claim the Delaware water rights, but interest was computed at only 2.5 per cent and no correct discounting procedure was used.

The magnitude of the losses from the actual plans in both cases depends on the choice of interest rate. The book argues that the proper rate for water projects is 10 per cent, on the grounds that private utilities would have an average capital cost of 8 to 9 per cent, and additional allowance must be made for foregone property taxes and the greater riskiness of public projects. The analysis is based on the theory that the actual structure of interest rates is optimal in all respects, including the risk premiums. This is a questionable proposition. First, the level of interest rates depends on the rate of saving and investment, and hardly anyone has argued in recent decades—and certainly no one has proven!—that the actual rate of investment and growth in the United States is the optimal one. Second, no one has argued that actual risk premiums are optimal, which at the least would require the existence of optimal casinos and insurance companies; in fact, the problem has not even been worked out at the theoretical level. Third, though the authors make light of the point, the capital market may be imperfect, and in any event, private utilities, their standard of comparison, are a legal monopoly. Finally, that last per cent seems to be tossed in just for good measure. Apart from this interest rate, the discussion of investment criteria contains nothing new.

For water-supply pricing, the authors adhere as closely as possible to the marginal cost principle, given the cost of metering; they propose a seasonal differential. The Water Rates Manual of the American Water Works Association, which is based on an elaborate attempt to identify certain categories of costs with certain kinds of users for purposes of rate-setting, is heavily taken to task because the procedure smacks of average-cost pricing. But it is not inconceivable that the proposals of this Manual, based on elaborate empirical analysis and growing out of the evolving experience in the field, may lead to a better result than the suggestions offered here. In any event, discussion of ideal pricing systems, divorced from the particular features of the problem, resulting in casual "practical" proposals, is not enough. More detailed work applying economic principles to realistic cost and demand data is necessary before proposals for radical changes from established practice can be considered seriously.

The discussion of water law suffers from the same fault to a worse degree. The classical system of resource allocation requires property rights, including water rights, to be secure and marketable, with damages to third parties to be compensated. Such a system is held to be superior to the present Western

system of revokable government allocations according to "beneficial use." Perhaps it is; yet in our history, the classical doctrine was approximated by the traditional appropriation doctrine of water rights, which the authors prefer, but which was gradually abandoned in the arid parts of the United States because it proved unworkable. The newer doctrines may work imperfectly, and I suspect that at certain points greater marketability could lead to net gains. The real problem is to find these points, rather than to propose a complete revolution contrary to the trends of history, without any real basis for evaluating the possible results or the practical difficulties. (For example, the proposal to have the courts determine compensation payments in a field in which external physical repercussions are the rule would immensely add to the work load of the courts—and this at a time when water rights cases are already a heavy and foolish burden, particularly for the U.S. Supreme Court.) More broadly, I believe that the degree of conceptual resemblance of systems to an ideal market system is not a sufficient criterion to rank them. It may be one of the better places to start thinking about the problem, but it takes an evaluation of the historical record, especially detailed examination of cases, to come to firm conclusions.

All in all, this is a book which at times is brilliant and always immensely stimulating. The exposition and style are excellent. The two case studies teach important lessons to all communities. In the three more general problems treated, the authors' faith in the market mechanism makes them claim more than they have shown, and makes them too impatient with slowly evolving institutions and the more pedestrian efforts at gradual improvement by practitioners in the water field.

OTTO ECKSTEIN

Harvard University

The Economic Background to Agricultural Policy. By EDITH H. WHETHAM. Cambridge: The University Press, 1960. Pp. xii, 147. \$4.50.

If one compares Miss Whetham's succinct treatise on agricultural economic problems in industrial society to another book on the same subject, published a few years ago by another member of the fair sex (Anne Martin, *Economics and Agriculture*, London 1956), one is tempted to see in the efforts of the two authors the same exhibition of fair play and sportsmanship that is yearly displayed at the boatrace between Oxford and Cambridge. Miss Whetham, of the School of Agriculture at Cambridge, is competing here intellectually with Miss Martin of Oxford and the outcome seems to be a draw between the contestants. Perhaps Miss Martin is a few inches ahead if you judge the performance from a purely technical-professional viewpoint; her book has more of the simple graphs that one finds in a text on elementary economics (17 against Miss Whetham's 6). On the other hand, however, the latter has more tables with statistical information (26) than the former (8). Miss Martin speaks about demand and supply of food, forms of competition, marketing, policies and the need for government intervention, and so does Miss Whetham though the outline of her little book is more sophisticated and less orthodox.

The publication of these elementary exposés of agriculture in Western economies, such as the *Economic Background*, is designed to instruct the uninitiated in the complex operation of our economy. Unfortunately the literature of agricultural economics is sorely devoid of a good, general, up-to-date and complete textbook, but not of short, popular, elementary descriptions, and here it has been enriched by another slightly superficial volume.

On the other hand, *Economic Background* is a readable and intelligent book. Its author has insight into the nature of the agricultural problems of our times. After a rather dull beginning, the book works itself uphill to an interesting outline of the more important economic characteristics and the "structural defects" of agriculture. The outlining of these defects is designed to make a good case for greater intervention by government as against what the author calls (quite ineptly) "planning by the market mechanism," and to explain and justify such measures as price or income supports. But sympathetic as one may be with the views exposed by the author—and this reader definitely is—her arguments seem to be academic, because it is doubtful that there are many people left in Britain, the United States or other developed nations who would still honestly and seriously advocate the elimination of government intervention in agriculture. Incidentally, Miss Whetham never goes beyond explaining and justifying existing policies and devotes little attention to their improvement or replacement or expansion.

There are several startling weaknesses. Though the author wishes to use U.S. statistics to support her case because of their ready availability, some information is antiquated (see for example p. 10, Table 2), and more up-to-date material could easily have been introduced throughout. It is also somewhat incongruous to find the author saying (p. 8) that the "analysis of the persuasive and detailed influence of prices . . . is . . . the first stage in the study of agricultural economics and agricultural policies," and then proceed bravely on the very next page to expound income elasticity of demand (pp. 9 ff.).

ERNEST FEDER

University of Nebraska

Labor Economics

Industrialism and Industrial Man. By CLARK KERR, JOHN T. DUNLOP, FREDERICK H. HARBISON, and CHARLES A. MYERS. Cambridge: Harvard University Press, 1960. Pp. 331. \$6.00.

This book is elusive, both in purpose and in execution. The concern of the four authors is with the process of industrialization, and particularly with the relationships which it creates between workers and managers. They propose "to create a framework of our own . . . which is, in its totality, new and different" (p. 2). They offer "an approach to an understanding of industrial relations which seeks to draw on the experience of several countries" (p. 12). An "approach" implies a choice of issues, and on pages 20-21 they have listed ten "central questions" to which they intend to address themselves, ranging from what contributions have been made by previous interpretations of industrialization, to whether industrializing societies tend to become more similar

to each other. But they also assert that "the discussion of these questions as a whole is designed to provide a coherent and general theory of industrialization and its impact on managers and workers" (p. 21).

A framework of analysis and an approach to a denationalized understanding of industrial relationships is here, but I have searched in vain for the theory. The book is long on categories and classifications and impressionistic observations, but it is short on analysis. It is perhaps best described as a latter-day descendant of the 19th century German school of economic history, whose hallmark was a literary exposition of the transition from one idealized state of economic development to another.

The general theme of this study, as I reconstruct it, is that first comes pre-industrialism, which has its setting in a variety of cultures with differing forms of economic organization. "Into the midst of this disparity of systems there [then] intruded a new and vastly superior technique of production" (p. 279), embodied in the industrialization process. "Once unleashed on the world, the new technique kept spreading and advancing." The manner of its spread was determined, however, by the nature of the "elite" group dominating a particular society.

These elites can be grouped into five "ideal types," whose names are sufficiently self-descriptive for purposes of this review. These types are the dynastic elite, the middle class, the revolutionary intellectuals, the colonial administrators, and the nationalist leaders. In each country where industrialization appears, it is sponsored by an elite which falls into one of these ideal types, with that elite seeking "to organize society in such a way as both to use the new technique and to serve their own goals." Although other forces help to shape the industrializing society, the dominant influences are the sponsoring leadership group and the society's own culture patterns. "The inherent logic of industrialism interacts with the diversity of cultural factors, economic constraints, and the strategies of the industrializing elites."

The result is a process which in its earlier stages differs among countries by virtue of the dissimilar influences playing on it, but one which itself becomes increasingly influential as it spreads through a society, its own technical requirements—uniform across cultural boundaries—overshadowing the distinctive character imparted by its elite sponsors and cultural traits. In this conflict between elitist control of the process and its own self-determining qualities (here the line of argument seems occasionally to shift and is not wholly clear), the elitist group can hope to ride the industrializing wave only if it adapts to the necessities which the process imposes. But, in adapting, its own character is changed, and over time all elitist groups tend to become more and more similar. So do their industrialized societies. In future generations the world will become one more or less homogenized ball of industrialism except for minor cultural variations of a "Bohemian" nature.

This broadly stated thesis makes an arresting point of departure for the construction of a conceptually-based theory which might then have been tested by reference to the course of development in particular countries. Considering the fact that this volume constitutes the capstone of a five-year project involving 78 persons of 11 nationalities, sponsoring 40 projects in 35

countries, and producing 12 books with 14 more to come, not to mention more than 21 articles, this might not have been out of the question. But no such attempt has been made. There are a few—surprisingly few—casual references to the country studies, but no systematic exploitation of that mountain of material. But perhaps this failure to use the country data systematically in exploring the challenging thesis posed is not so surprising in view of the fact that, in its present vague and unclear statement, it would be impossible to test for anything.

The two key "concepts" in the argument are (1) the industrializing process and (2) the industrializing elites. The relationship (one might almost say the contest) between these two constitutes the leitmotif of the whole volume. It is a fascinating theme—if I seem to be unduly critical of the result it is only because so much promising material has been allowed to go to waste. The notion of a technological movement spreading over the world like some irresistible glacier, transforming societies by the strength of its own "logic," with five types of leader groups in country after country around the world seeking to harness its tremendous powers for their own ends, only themselves to be swept aside or transformed in the process, is a conception as breathtaking as Marx's. But Marx's conclusions rested on concept and theory, however much these erred in particulars. The present study has substituted categories for concepts, assertions for analysis, and impressionistic observation for theoretical abstraction.

Consider "the industrializing process," one of the two "conceptual" bases on which this edifice is built. How do the authors define it? Gertrude Stein could have done no better. "Industrialization refers to the actual course of transition from the traditional society toward industrialism. Industrialism is an abstraction, a limit approached through historical industrialization. Industrialism is the concept of the fully industrialized society, that which the industrialization process inherently tends to create" (p. 33).

It is clear by referring to this as a process and by mention of its historical epochs and the stages of its development that the authors conceive of industrialization as something evolutionary. "However, no country is yet fully industrialized; all economies, including the United States and Great Britain, are still to some extent underdeveloped" (p. 18). What is it then that we in this country are still in the process of becoming? What constitutes "full" or "successful" or "complete" industrialization—adjectives which appear from time to time in the book? How does industrialization differ from the postagricultural, postcommercial phases of economic development? If it is not equivalent to economic growth (excepting its farming and mercantile aspects), how is it distinguished? Is "full industrialization" the end of the economic road, beyond which no other stages lie, as seems to be implied?

What is the "logic" of industrialism, to which the authors devote a chapter? The question is answered there only in terms of a list of characteristics rationally or empirically presumed to be associated with that phenomenon which is left so undefined: a high degree of occupational and social mobility in an open society; an enveloping system of education but geared to technological processes; a highly differentiated labor force subject to a web of rules and

structured in occupational and professional associations; an urban dominance of the society; a large role for government by way of regulating and coordinating relationships; a society largely governed by consensus, worldwide in its orientation, and a population whose numbers have been brought under control.

The grounds for associating these traits with industrialism (whose nature we must intuitively grasp or deduce from bits of evidence scattered through the book) are developed in the literate style to which we have become accustomed from each of the authors. But nothing in the chapter builds up to a concept of the "logic" of that irresistible force which is destined to transform the world. There is no sense of an inherent nature of an evolutionary process which builds on itself and which has these characteristics out of some inner necessity. It is almost as though the authors were defining an "ideal" industrialism in terms of these traits. Other writers might "define" it by a different set of characteristics. And this is not the kind of situation where one social scientist can properly ask of another, "Grant me my definition and see what follows," for here "what follows" has been made part of the "definition."

Now, briefly, as to the ideal types of industrializing elites. Of these the authors say (p. 272): "The actual industrializing elites are seldom, if ever, as we have noted earlier, pure or ideal types. They are often both mixed and changing by type, although there is enough of the central theme of the ideal type to permit differentiation and classification of systems. At this stage in history, in the middle of the twentieth century, we can still identify many countries which adhere to one or another of these types; but relatively few of them illustrate the particular type in all its purity. Each type, however, seems to have its own natural tendencies for evolution and thus there exist more or less parallel evolutions for countries equally patterned after a certain type."

The uselessness of this kind of approach to a process analysis is easily demonstrable. If a type has any conceptual usefulness, its counterpart in the real world must be sufficiently akin to it that results which are deduced from the type apply to a real world situation. But if the types overlap, if they are "mixed and changing," application becomes a neat trick, the first aspect of which is to identify to what ideal type (or types) a given society at a given time corresponds. Presumably this cannot always be done, since it is said that in this century we can "still identify many countries" (not all) in this way. Parenthetically, it may be noted, however, that nowhere has any effort been made to establish such identification, except as casual example of some (partial) aspect of a society at some point in its history. The industrialization process has not been traced out in any country in terms of the pattern set forth in this book.

But the difficulties run deeper. With each ideal type there are associated (and described at some length) certain strategies and policies of industrialization, cultural factors, types of management, forms of worker protest, worker organizations, and industrial relations systems. What happens to these associated aspects of industrial society when each elite type follows its "natural tendencies for evolution?" Not until the last chapter, after the basic portions

of the framework have all been filled in, are we treated to some speculative and impressionistic observations as to how these changes may take place.

What happens when one of these types succeeds another in the same society, as the last chapter admits not only can happen but avers will happen? Does the whole bundle of associated social characteristics change along with the ideal type of governing elite? Or, as is implied, may certain characteristics implanted by an earlier elite persist even after it has been supplanted by another elite? If so, what does this do to any "natural tendency for evolution," or to any correspondence between actual characteristics of a society and those associated with its ideal type? If we are eventually led to say that no correlation may exist, then of what value as analytical tool is the typology?

The essence of the difficulty lies in the fact that the authors' unfortunate absorption with the ideal-type approach leads them into the necessity of intruding the dynamics of change into a methodological device that is inescapably static. Once they have constructed a roster of the social and institutional characteristics associated with a given type of elite, they are left with the necessity of maintaining that those characteristics are always associated with that type (regardless of how it comes to power or what other elite it succeeds), or else they are faced with the necessity of explaining changes in institutions and elites (which influences the other?) by some form of causal analysis which their typology nowhere provides. Or is it that the succession (evolution?) of elites is brought about by that onswEEPing and homogenizing (but still obscure) industrialization process itself? We are left in the realm of speculation for lack of a set of concepts which lend themselves to analysis.

Finally, with respect to the elite types, we are told that of the five, only two are "basic," the dynastic and the middle class. These two plant the colonial type (which is doomed to disappear) and they provoke the nationalistic and revolutionary intellectual types. But then, as we follow with pencil and paper to see where the "natural" evolutionary tendencies of these types will take us, we wind up with a surprising result. We are told (1) that the dynastic type, if it is ineffective, gives way to the nationalistic or intellectual revolutionary. If effective, it develops into a middle-class elite. (2) The colonial type precedes the nationalistic. (3) The nationalistic elite, if ineffective, leads to revolutionary intellectualism, and if effective, to a modified middle class. (4) The revolutionary intellectuals are historically dated, useful only for transitional purposes, and must give way too to a modified middle class. (5) The middle-class elite itself, however, is the most stable of the lot. It changes, but never in history has it been displaced once it was "in full control of the industrialization process."

Tracing these evolutionary paths out to their end results, we discover that the fate of all countries is to wind up under a modified version of the middle-class type. If we can reasonably presume that this type accords most closely with our society, and that our society is the closest prototype extant or emergent of this ideal type, then we are left with the heartening conclusion that given a few generations the whole world will be modeled after what we shall look like at that time.

Let me conclude by saying that there is a great deal in this book which

will stimulate one's thinking and lead him off into interesting intellectual paths. The central theme of the book is, as I have said, provocative and exciting. The execution betrays the difficulties of four-author collaboration in reducing a wealth of ideas to a systematic analysis resting on a clearly defined conceptual basis. But let us thank them for reaching for the stars!

NEIL W. CHAMBERLAIN

Yale University

The Lean Years—A History of the American Worker, 1920-1933. By IRVING BERNSTEIN. Boston: Houghton Mifflin, 1960. Pp. xi, 577. \$7.00.

History does not repeat itself, but it offers valuable guides and warning signals. The similarities and contrasts between basic trends in the 'twenties and developing conditions at present can provide a fruitful field of analytical study. The secular trends of the 'twenties may have been obscured by depression, war, and recovery, but they are reasserting themselves, albeit in a climate of altered philosophies, policies, and institutions. *The Lean Years* will be of major assistance in making comparative assessments. This massive and thoroughly, but unobtrusively, documented study deals with the influences on the status of the American worker, during both the periods of "normalcy" and of depression, between 1920 and 1933. Irving Bernstein, Associate Director of the Institute of Industrial Relations at the University of California, Los Angeles, has departed from the customary approach of the labor economist to labor history, in which the focus is on the organization and development of trade unions and their role in the economy. He has centered his attention on the worker, an approach particularly fitting to a period of union organizational decline when but one-tenth of nonagricultural workers belonged to unions. To the completion of this impressive study, Bernstein has applied an *expertise* in labor economics, history and political science developed both in university and government work. His sources have included government and private archives, and he has drawn extensively from both contemporary and current studies.

The manifold and complicated causes of the great depression are not the subject of this study. But its basic theme is the contributory effect of the lag in the status of the industrial worker behind technological progress. Bernstein contrasts hullabaloo given to the high-wage philosophy of Henry Ford with the failure of real wages to rise significantly after 1925, as wage rates and hours of work remained virtually unchanged. As he states, "the high wage philosophy of American industry. . . appears to have activated employers' vocal chords more than their purse strings." While wage gains lagged, productivity increases were accompanied by substantial gains in returns to capital, producing an unhealthy situation. The absence of adequate statistical measures of unemployment aided in obscuring the economic reality of a continuing and growing unemployment problem.

The weakness of the labor movement appeared to be abysmal. The employer drive against unionism had been effective. The courts protected the employer's right to hire and fire at will, and there was little or no legal protection against industrial espionage, the use of company police, and the use of

industrial munitions. Technological progress had made for redundancy. Shifts in the locale of production had made for the growth of nonunion production. A relatively stable price level, the growth of installment purchasing, accompanied by the new recreational opportunities provided by the automobile, the radio, and the movies, diverted worker interest from union organization. Even such a stronghold of unionism at the start of the 'twenties as coal was in a state of shambles by the end of the decade as the result of overcapacity, competing products, nonunion production, and internal battles.

Enervation was compounded by inability of the AFL leadership to look beyond the jurisdictional concerns of their own constituencies. The decline in strikes and worker involvement in these was evidence solely of the weakness of the labor movement. When reaction came in 1929, it came from the unorganized workers in the Southern Appalachian region who were subject to the stretch-out and wage reductions in the mills of the depressed textile industry. "The Piedmont on the eve of the Great Depression," Bernstein writes, "was a microcosm of all America in the somber decade to follow." Here, poverty, unemployment, low wages, long hours, poor factory conditions, and night work for women and children accompanied industrialization, employer domination and the absence of union organization.

Foreign observers viewed America as an "employer's paradise" in the 'twenties. But, as Bernstein points out, there was uneasiness among employers in this so-called paradise. There were those in management who spoke of the importance of improvements in employee relations, but carefully avoided inclusion of unionization; even these views were seriously characterized as "Bolshevism" by many other employers. The overt attacks on unions under the American plan in the early 'twenties gave way to the paternalism of welfare capitalism. The role of John D. Rockefeller, Jr. in this transitional process is described in detail. The author deals at length with the limitations of paternalism in the representation of employee interests, and its developmental character. For as William Leiserson viewed these developments: "The management has started a movement in the direction of democracy in industry which is bound to grow."

The analysis of the efforts to cope with the growing depression between 1929 and 1933 provides a classic study of the lag between stereotype views of the role of government and the realities of economic development in the country. Basically, the issue involved in the battle over extension of the role of the federal government in meeting the crisis with approaches geared to the impelling national and international circumstances involved the nature of a democratic society. As Bernstein states, at issue was "whether the majority or merely a few of its members were to make its basic economic decisions." The slow and arduous, and largely unsuccessful, process by which those who, like Senator Wagner, sought to overcome the objections of the Hoover administration to federal action is described in a revealing account. The recapitulation of all of the devices of a *laissez-faire* society in meeting crisis, including work sharing, charitable provision, and growing local governmental assistance, during the period 1929-33 is required reading.

This is, of necessity, a prologue to another study which Bernstein has un-

der way, that of the New Deal which, more than the immediate elimination of economic depression, was also concerned with relieving the contributing influence of societal imbalance.

JOSEPH P. GOLDBERG

Washington, D.C.

Population; Welfare Programs; Consumer Economics

Population Redistribution and Economic Growth, United States, 1870-1950.

Prepared under the direction of SIMON KUZNETS and DOROTHY S. THOMAS. Vol. I, *Methodological Considerations and Reference Tables*. By E. S. LEE, ANN R. MILLER, CAROL P. BRAINARD, and R. A. EASTERLIN. Pp. xix, 759. \$5.00. Vol. II, *Analyses of Economic Change*. By SIMON KUZNETS, ANN R. MILLER, and R. A. EASTERLIN. Philadelphia: The American Philosophical Society, 1957; 1960. Pp. xix, 759; xiii, 289. \$5.00, each vol.

In 1951, Simon Kuznets and Dorothy S. Thomas undertook the direction, at the University of Pennsylvania, of a large-scale statistical and analytical study of population redistribution and economic growth in the United States. In addition to the two volumes which have already appeared, a third volume dealing with migration and its relation to changing economic opportunities, is also planned for publication. Furthermore, during the course of the study, eight dittographed reports, ranging in length from 71 to 687 pages have been distributed to other interested investigators. These reports, which are listed in the introduction to Volume I and which include, in some cases, greater statistical detail than the published volumes, may be consulted at the University of Pennsylvania.

The guiding principle of the study was the conception of economic growth and population redistribution as linked by a continuous chain of interdependent variables. Starting with the premise that "the distribution of a country's population at a given point of time may be viewed as a rough adjustment to the distribution of economic opportunities," the authors emphasized the importance of the impact of technological progress on the distribution of economic opportunities and looked upon migration as the chief mechanism by which the distribution of population would be adjusted to the distribution of economic opportunities.

The study is based almost entirely on census data, including the censuses of manufacturing and other industries as well as the decennial censuses of population. The task of reclassifying, adjusting, and utilizing census data to develop reasonably comparable series over an 80-year time span as well as estimates of interstate and interregional migration was formidable. So were the statistical computations carried out to shed light on the relationships with which the analytical part of the study is concerned.

The results are immensely valuable as a convenient source of statistical data, much of which is in a form not available elsewhere. The future investigator who is concerned, for example, with an analysis of the development of a particular state or region will find his task immeasurably lightened as a

result of the availability of reclassified census series and migration estimates for his state or region. The fact that the methodological problems have been discussed in detail also adds greatly to the value of Volume I as a reference source. As Lee points out, for example, in his discussion of estimating net migration from census survival ratios, much of the literature on the relevant methodology can be found only in scattered journal articles and unpublished manuscripts.

Volume II also includes much useful statistical information as well as analytical reports on labor force trends and differentials, the redistribution of manufacturing, the regional growth of income, and the changing distribution and structure of economic activity. Although there are some valuable contributions to the interpretation of American economic development, particularly in the sections based on refined statistical analysis by Easterlin and by Kuznets, a substantial part of the second volume covers relatively familiar ground, especially in the sections on labor force trends and the regional distribution of manufacturing employment. It may well be that the third volume will represent a more important contribution, since detailed migration data have, for the most part, been less accessible than the labor force, manufacturing, and income data analyzed in Volume II.

On the whole, economic development over the 80-year period studied by the authors has been accompanied by a trend toward greater interstate and interregional similarity in economic structure—or, to use the term frequently employed by the authors, toward convergence of structure. Differences, for example, in labor force participation rates, in the industrial distribution of the labor force, and in per capita income have been substantially reduced over the 80-year period. And, to a significant extent, these changes have been the result, as economic analysis would lead us to expect, of (1) migration away from the areas of relatively unfavorable economic opportunities toward those in which opportunities were more favorable, and (2) capital movements from areas of capital surplus to areas of capital shortage. But the convergence of per capita income has also been associated, to an important degree, with the increase in the proportion of workers engaged in nonagricultural activities—in which differences in income per worker have been narrower than in agriculture—in all the states.

However, some of the most interesting findings have to do with those aspects of economic structure in which convergence has not occurred. There has been only a slight reduction, for example, in the degree of concentration of manufacturing activity. Furthermore, although the study did not include an analysis of the distribution of specific industry groups within manufacturing, it yielded considerable evidence of a trend toward greater regional specialization in types of manufacturing industries. There has also been very little convergence in agriculture service income per worker, although, with the marked decline in the proportion of workers engaged in agriculture, this factor has become increasingly less important as a source of disparity in per capita income among the states.

Also of considerable interest is Kuznets' analysis of fluctuations in the rate of change. He shows, for example, that periods in which the rate of change

in aggregate activity was greatest were also characterized by more marked shifts in the distribution among subnational areas. He also shows that, although the rate of redistribution declined between the first and second halves of the 80-year period, the decline was particularly noticeable in agricultural and other space-oriented components of the economy, but was less marked in nonagricultural components. This suggests the probability that, particularly if technological change continues to occur at a rapid rate, there will continue to be a substantial amount of interstate and interregional redistribution of economic activity.

MARGARET S. GORDON

University of California, Berkeley

Higher Education in the United States, the Economic Problems. Edited by SEYMOUR E. HARRIS. Cambridge: Harvard University Press, 1960. Pp. 252. \$5.50.

This volume presents the proceedings of a seminar suggested (and presumably financed) by the Ford Foundation and held at Harvard University during the academic year 1958-59. The following section headings from the table of contents suggest the range of topics considered: I. Introduction (by the editor); II. Pricing and the Student Body; III. Government Aid; IV. Faculty Status; V. Experiment in Higher Education: Educational and Economic Issues; VI. Economics and Educational Values; VII. Investment and Endowment Policies. Many of the individual papers reveal keen analysis of several segments of higher education. Space prevents proper recognition of each such contribution.

The seminar was attended by 104 persons, but only 43 contributed papers. For example, of 51 college administrators who participated, only 21 contributed papers; 11 economists attended, of whom 6 contributed papers. The balance, or lack thereof, among the professions represented was premeditated because, in the words of the editor, the "economists might forget that though the limitation of resources is very important, educational values are the major issue."

As this reviewer would have anticipated, the economics professors appear to know as much about the educational values as they do about the limitation of resources, and more about both than do the administrators. Sections II, III and V contain several good economic analyses of the processes and the products of higher education. Each of these papers reveals the teachers' basic understanding of the reasons why universities exist.

The case for free tuition for all in public institutions, and hence for appropriate allocations, is emotionally defended in Sections II and III by courageous spokesmen from two of the public systems in New England. The admitted penury of the Commonwealth of Massachusetts in silent contrast with the private wealth of Harvard provides a poor setting for the argument. Perhaps it would have been wiser to have had Michigan or California or Wisconsin present the case for public higher education.

The most provocative papers are in Section V dealing with experimentation. The Dartmouth, Oberlin and New College (project of four colleges in Connecticut Valley) experiments each revolve in some manner around the idea

that the student needs to be weaned from the professor if he is to do independent critical thinking. That this weaning will result in a higher student-faculty ratio is incidental to the main educational benefits, despite the fact that a desire for economies apparently sparked the search for new methods. All of the evidence is not in on these experiments. It is refreshing, however, to see the time-honored problem of the student-faculty ratio attacked in a new way. Instead of a meat-ax solution to the "inefficiencies" of small classes, which calls for the wholesale elimination of such classes, they are, rather, to be used to train students to work independently. If the oncoming horde of college students contains enough seekers of knowledge rather than seekers of degrees, or prestige, this scheme could work.

The summary of Section VI suggests that some consideration was given in discussion to the delicate problem of evaluating the educational product emerging from certain types of institutions. Except for a devastating attack on the University of Puerto Rico, the formal papers contain very little discussion of this topic. Future seminars might profitably explore in depth the extent to which the United States can afford to expand its support of such schools as the small church-related college and the "normal school" which has become a liberal arts college by legislative fiat. The rapidly growing awareness of the national economic values of an educated citizenry requires an evaluation of the opportunity costs of broadening the base of higher education to the extent that the alternative is an improvement of its quality.

The section on "Investment and Endowment Policies" is fairly dull reading. Capital gains may be important for some colleges, but can scarcely be relied upon to make a major contribution to the needed budget for higher education in the next decade. Similarly, light was shed on the financial problems of very few institutions by the finding that it would be unwise for Harvard to borrow money for construction.

For those who desire to become generally acquainted with some economic phases of higher education Harris and the contributors have provided a useful volume. This 8½ by 11 inch, two-column page book might have been subtitled "Some Economic, and Other, Aspects." The contributors, for the most part, in addressing themselves to their assigned topics, report on activities or experiences of their own. Thus, despite a 28-page "Introduction, Some Broad Issues," by the editor and a lengthy "Summary of Proceedings" for each of the 6 main sections, it is not accurate to say that *the* economic problems of higher education in the United States have been delineated.

ERIC W. LAWSON

Syracuse University

Ensuring Medical Care for the Aged. By MORTIMER SPIEGELMAN. Homewood, Ill.: Richard D. Irwin, Inc., 1960. Pp. xxvi, 280. \$6.25.

One of the more controversial problems in U.S. domestic politics concerns the formulation of a program for providing and financing medical care for the expanding aged segment of the population. The problem is complicated by the fact that the relatively high rate of utilization of medical and hospital care comes at the very time when income is lessened.

Mortimer Spiegelman has assembled and interpreted a vast array of the

latest findings about the aged and especially as to the factors which have a bearing on the problem of providing medical care for the group. This volume was prepared under the auspices of the Pension Research Council of the Wharton School of Finance and Commerce, University of Pennsylvania. The author is a fellow of the Society of Actuaries, of the American Statistical Association, and associate statistician, Metropolitan Life Insurance Company.

The study is divided into six major sections with an introductory and a concluding chapter. The main sections are concerned with: (1) the demography of the aged, their social characteristics, and their economic status, including income and asset resources; (2) the health status of the aged and their attitudes toward their health problems; (3) the record for utilization of hospital and medical services for the aged; (4) the extent of their medical-care expenditures; (5) the scope of coverage of medical-care expenditures of the aged under existing voluntary and government mechanisms; (6) the broad approaches to providing medical care for the aged, including voluntary health insurance, extension of the federal OASDI program to cover medical care expenditures of aged beneficiaries, and a national health service. The author makes no proposals of his own.

After describing the current provision for financing medical care, he points out how "the problem of insuring the aged differs from that of younger persons because older people have a high prevalence of costly chronic illness, greater degree of introspection with regard to their health status, and are subject to marked changes in their social and economic milieu." Spiegelman properly shows that the individual, the employer, the labor union, and the community must give careful consideration to the medical care needs of old age in allocating available resources. He is not, however, carried away by the problem and states that "... although the aging of population creates certain serious problems, there has been a tendency to magnify the dangers that are likely to arise."

The proposal for a program of compulsory health insurance for recipients of OASDI is a departure from the traditional pattern of voluntary health insurance which has become so widely accepted in the United States. The first issue raised by this proposal is whether the existing system of voluntary health insurance can do the job. The author emphasizes that voluntary health insurance for the aged is only in its developmental stage. If given the same opportunity to develop programs for the aged as it has for the working population, the voluntary system, the author implies, will come close to solving the problem. This confident attitude is shared by the medical profession and, of course, by the insurance business. The proponents for an insurance program within OASDI have serious doubts about this conclusion. The second issue arises from the fact that those who favor a compulsory approach through social security contributions also appear to favor compulsory health insurance for the entire population.

The author's conclusion, if we can term it such, is one of measured hope. He urges a concentration on a better understanding of the problems of the aged and changes in the pattern of their care made possible by postwar developments in science and medical technology. "To keep abreast of both these

changing characteristics, and the dynamism in medical care for the aged, the mechanisms for providing this care must be sufficiently flexible to adapt to new situations as they arise." Spiegelman's plea is for a guided, if not somewhat tempered, experimentalism in which we may find a free play of ideas and institutions.

The author provides clear guideposts in the form of general remarks and conclusions on the cost of medical care. The general theme which may be said to emerge is that, contrary to the commonly held notion that our approaches to the treatment of the problem of medical care for the aged are sluggish and backward, we are making substantial progress. The book is well written; the evidence of painstaking scholarship and objectivity is clear. The reviewer wishes that the author had permitted himself to reach a conclusion on the complex issue now under consideration. Is the relief approach to providing medical care for the aged "adequate" in our "affluent society?" Is there any hope that the voluntary method can effectively meet the problem in view of the fact that only 20 per cent of the aged are employed? Much of the data, in the reviewer's judgment, suggests that sole reliance on voluntary health insurance will not meet the situation. The author's contribution would have been larger had he pushed his own findings to a conclusion, in either direction.

WILLIAM HABER

The University of Michigan

TITLES OF NEW BOOKS

General Economics; Methodology

- BORCHARDT, K. *Denkschrift zur Lage der Wirtschaftswissenschaft*. Wiesbaden: F. Steiner, 1960.
- BROKMEYER, M. W. J. M. *Strategische economie. Enige problemen van de totale oorlog.* (Some problems of economic strategy in total war). Amsterdam: Elsevier, 1960. Pp. 200. f 12.50.
- CAFFÉ, F. *Saggi critici di economia.* (Critical essays on economics.) Rome: De Luca Ed., 1958. Pp. 136.
- CARTER, W. J. AND SNAVELY, W. P. *Intermediate economic analysis*. New York: McGraw-Hill, 1961. Pp. viii, 424. \$6.95.
- DUNLOP, J. T., ed. *Potentials of the American economy—selected essays of Sumner H. Slichter*. Cambridge: Harvard Univ. Press, 1961. Pp. xxiv, 467. \$7.50.
- HANSEN, A. H. *Economic issues of the 1960's*. New York: McGraw-Hill, 1960. Pp. xv, 244. \$5.50.
- HITCH, T. K., comp. *Economics for the 1960's*. Honolulu: First Nat. Bank of Hawaii, 1961. Pp. 99.
- KEISER, N. F. *Introductory economics*. New York: John Wiley, 1961. Pp. xiii, 545. \$6.50.
- KNOFF, K. A. AND STAUSS, J. H., ed. *The teaching of elementary economics—a conference of college and university teachers at the Merrill Center for Economics*. New York: Holt, Rinehart and Winston, 1960. Pp. xi, 269. \$3.50.
- LEVY, E. *Analyse structurale et méthodologie économique*. Paris: Edit. Génin, 1960. Pp. 292. NF 30.
- MOLL, B. *¿Hay justicia en la economía?* Buenos Aires: Selcon, 1959. Pp. 111. 12 pesos.
- MORRIS, R. T. *Fundamentals of economics*. New York: Ronald Press, 1961. Pp. xvi, 878.
- NICOLAI, A. *Comportement économique et structures sociales*. Paris: Presses Univ. de France, 1960. Pp. viii, 324. NF 16.
- ORTLIEB, H.-D., ed. *Hamburger Jahrbuch für Wirtschafts- und Gesellschaftspolitik*. Vol. 5. Tübingen: J. C. B. Mohr (Paul Siebeck), 1960. DM 21.30.
- REYNARTS, W. H. J. *Sociale economie.* (Social economics.) Utrecht: Het Spectrum, 1960. Pp. 184. f 4.50.
- SAIBANTE, M. *Studi di economia statistica e sociologica.* (Studies in statistical economics and economic sociology.) Rome: Under direction of *Rivista di Politica Economica*, 1959. Pp. xii, 789.
- Index of economic journals—vol. 1, 1886-1924. Prepared under the auspices of the American Economic Association. Vols. 2-5. 1925-1959, forthcoming 1961. Homewood, Ill.: Irwin, 1961. Pp. iv, 270. \$25, for set of 5 vols.
- Staatslexikon—Recht Wirtschaft Gesellschaft. Vol. 5, Konsumentencredit bis ökumenische Bewegung. Freiburg: Herder; New York: Herder Book Center, distrib., 1960. Pp. 1246.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- ACKLEY, G. *Macroeconomic theory*. New York: Macmillan, 1961. Pp. xv, 597.
- ÅKERMAN, J. *Samhällsstruktur och ekonomisk teori*. Lund, Sweden: C. W. K. Gleerup, 1960. Pp. 139. SKr. 9.
- ANDREATTA, N. *Distribuzione del reddito e accumulazione del capitale.* (Income distribution and accumulation of capital.) Milan: Giuffrè, 1958. Pp. 173.

- BAUMOL, W. J. *Economic theory and operations analysis*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. x, 438. \$6.75.
- BETTEHEIM, C. *Studies in the theory of planning*. New York: Asia Pub. House; New York: Taplinger, distrib., 1959. Pp. xii, 451. \$7.25.
- BODENHORN, D. *Intermediate price theory*. New York: McGraw-Hill, 1961. Pp. vii, 318. \$6.75.
- BOUSQUET, G.-H. *Esquisse d'une histoire de la science économique en Italie—Des origines à Francesco Ferrara*. Paris: M. Rivière, 1961. Pp. 108. NF 5.
- BRAMBILLA, F. *La distribuzione dei redditi*. Pavia: Prem. Tip. Successori Frat. Fusi, 1960. Pp. viii, 298.
- BRANDT, K. *Preistheorie*. Ludwigshafen am Rhein: Fachverlag f. Wirtschaftstheorie und Ökonometrie, 1960. DM 13.80.
- CREAMER, D., DOBROVOLSKY, S. P. AND BORENSTEIN, I. *Capital in manufacturing and mining: its formation and financing*. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1960. Pp. liv, 344. \$7.50.
- FAY, C. R. *The world of Adam Smith*. Cambridge: Heffer, 1960. Pp. vii, 97. 15s.
- FRANCO, G. *Contributo all'analisi teorica dei fattori del ciclo economico*. (A contribution to the theoretical analysis of the trade cycle.) Padua: CEDAM, 1959. Pp. 164.
- FREEDMAN, R., ed. *Marx on economics*. A Harvest paperback. New York: Harcourt, Brace, 1961. Pp. xxv, 290. \$2.25.
- "This volume has as its function bringing together in one place, as systematically arranged and logically ordered as possible, all of Marx's major statements respecting ideology and methodology, Marxian economics, and the shape of socialism and communism. The main focus of the collection is, of course, Marx's analysis of the nature of capitalism." (From the author's preface.) The selections are taken from a wide range of Marx's works, and are tied together with brief summaries preceding the extracts.
- GAREGNANI, P. *Il capitale nelle teorie della distribuzione*. (Capital in the theories of distribution.) Milan: Giuffrè, 1960. Pp. viii, 253. English edition soon to be published.
- GOODWIN, C. D. W. *Canadian economic thought—the political economy of a developing nation 1814-1914*. Durham: Duke Univ. Press for Duke Univ. Commonwealth-Studies Center; London: Cambridge Univ. Press, 1961. Pp. xvi, 214. \$6.
- GREENHUT, M. L. AND JACKSON, F. H. *Intermediate income and growth theory*. Englewood Cliffs: Prentice-Hall, 1961. Pp. viii, 376. \$6.25.
- HAMBERG, D. *Principles of a growing economy*. With three introductory chapters on American economic institutions by D. F. Dowd. New York: W. W. Norton, 1961. Pp. xviii, 879. \$6.95.
- HARROD, R. *Topical comment—essays in dynamic economics applied*. New York: St. Martin's Press; London: Macmillan, 1961. Pp. ix, 265. \$5.75.
- HICKMAN, B. G. *Growth and stability of the postwar economy*. Washington: Brookings, 1960. Pp. xviii, 426. \$6.
- HUTTON, G. *Inflation and society*. London: Allen & Unwin, 1960. Pp. 161. 15s.
- IMBERT, G. *Des mouvements de longue durée Kondratieff*. Aix-en-Provence: La Pensée Universitaire, 1959. Pp. xii, 535, plus charts. NF 45.
- KRUSE, A. *Die Produktdifferenzierung in Theorie und Praxis*. Freiburg im Breisgau: R. Haufe, 1960. DM 16.
- KUCZYNSKI, J. *Zur politökonomischen Ideologie in Deutschland vor 1850 und andere Studien*. Die Geschichte der Lage der Arbeiter unter dem Kapitalismus, Band 10. Berlin: Akademie-Verlag, 1960. Pp. vi, 176. DM 11.
- LANDGREN, K.-G. *Den "nya ekonomien" i Sverige*. J. M. Keynes, E. Wigforss, B. Ohlin. Utvecklingen 1927-1939. Uppsala: Almqvist & Wiksell, 1960. Pp. 320. SKr. 24.
- MEADE, J. E. *A Neo-classical theory of economic growth*. London: Allen & Unwin, 1961. Pp. ix, 146. 25s.

- MUNTHER, P. Producentens vertikale markedsopolitik som pristeoretisk problem. Bergen: Universitetsforlaget, 1960. Pp. 62.
- PAGLIN, M. Malthus & Lauderdale—the anti-Ricardian tradition. New York: Augustus M. Kelley, 1961. Pp. 184. \$4.75.
- RICHARDSON, G. B. Information and investment—a study in the working of the competitive economy. New York: Oxford Univ. Press, 1960. Pp. 226. \$3.40.
- ROBINSON, J. Exercises in economic analysis. New York: St. Martin's Press; London: Macmillan, 1960. Pp. 20, 242. \$3.75.
- SCHMITT, B. La formation du pouvoir d'achat—l'investissement de la monnaie. Recherches econ. no. 3. Paris: Lib. Recueil Sirey, 1960. Pp. 155.
- SIRKIN, G. Introduction to macroeconomic theory. Homewood, Ill.: Irwin, 1961. Pp. xii, 252. \$6.50.
- TURVEY, R. Interest rates and asset prices. New York: Macmillan, 1960. Pp. 109. \$3.
- VORMBAUM, H. Differenzierte Preise—differenzierte Preisforderungen als Mittel der Betriebspolitik. Cologne: Westdeutscher Verlag, 1960. Pp. xi, 291. DM 36.
- WEURLESSE, G. La Physiocratie à la fin du règne de Louis XV (1770-1774). Paris: Presses Univ. de France, 1959. Pp. xii, 238. NF 9.60.

Economic History; Economic Development; National Economies

- AERTS, J. AND RAYMAEKERS, R. A. Het arrondissement Mechelen—een regionaal-economisch onderzoek. Louvain: Lib. Univ. Uystpruyst, 1961. 360 f.
- ASHWORTH, W. An economic history of England—1870-1939. New York: Barnes & Noble; London: Methuen, 1960. Pp. viii, 438. \$6.50.
- AUSTRUY, J. L'Islam face au développement économique. Econ. et civilisation vol. 3. Paris: Ed. Ouvrières, 1961. Pp. 140. NF 7.80.
- AVSENEV, M. H. The Democratic Republic of Viet Nam economy and foreign trade. New York: Joint Pub. Research Svce., 1961. Pp. 194.
- BAULANT, M. AND MEUVRET, J. Prix des céréales extraits de la mercuriale de Paris (1520-1698). I, 1520-1620. Paris: S.E.V.P.E.N., 1960. Pp. 260.
- BERGER, V. M., China—an economic-geographic sketch. New York: Joint Pub. Research Svce., 1960. Pp. 87.
- BERMAN, B. R., CHINITZ, B. AND HOOVER, E. M. Projection of a metropolis—technical supplement to the New York Metropolitan study. Cambridge: Harvard Univ. Press, 1960. Pp. 119. \$4.
- BHATT, V. V. Employment and capital formation in underdeveloped economies. Bombay: Orient Longmans, 1960. Pp. 127. Rs 10.
- BLACK, E. R. The diplomacy of development. Cambridge: Harvard Univ. Press, 1960. Pp. 74. \$3.
- BORDAZ, R. La nouvelle économie soviétique 1953-1960. Paris: B. Grasset, 1960. Pp. 287. NF 12.
- BOSCH, W. Marktwirtschaft—Befehlswirtschaft: ein Vergleich der Wirtschaftsordnungen in West- und Mitteldeutschland. Heidelberg: Quelle & Meyer, 1960. DM 23.
- CAMERON, R. E. France and the economic development of Europe 1800-1914—conquests of peace and seeds of war. Princeton: Princeton Univ. Press, 1961. Pp. xviii, 586. \$10.
- CHARDONNET, J. L'économie française. Etude géographique d'une décadence et des possibilités de redressement. 2 vol. Paris: Dalloz, 1958; 1959. Pp. 452; 407.
- CHAUNU, P. Les Philippines et le Pacifique des Ibériques (XVIème, XVIIème et XVIIIème siècles). Paris: S.E.V.P.E.N., 1960. Pp. 301. NF 28.
- CLARK, C. Growthmanship—a study in the mythology of investment. Hobart paper 10. London: Barrie and Rockliff for Inst. of Econ. Affairs, 1961. Pp. 63. 5s.
- . The real productivity of Soviet Russia—a critical evaluation. Printed for informa-

- tion of Subcommittee to Investigate the Administration of the Internal Security Act and other Internal Security Laws, Senate Committee on the Judiciary, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. iv, 61.
- CUMPER, G. E., ed. *The economy of the West Indies*. Kingston: United Printers for Inst. of Social and Econ. Research, Univ. College of the West Indies, 1960. Pp. 272.
- DAS, N. *Unemployment, full employment and India*. 3rd ed. New York: Asia Pub. House; New York: Taplinger, distrib., 1960. Pp. 94. \$2.95.
- DELL'ANGELO, G. C. *Note sulla sottoccupazione nelle aziende contadine*. (Notes on underemployment in the small farms.) Rome: SVIMEZ, 1960.
- DELLA PORTA, G. *Lo sviluppo economico—Le teorie, le politiche, i problemi*. (Economic development—theories, policies, problems.) Rome: Confederazione Generale dell'Industria, 1959. Pp. 173.
- DE NAVARRETE, I. M. *La distribución del ingreso y el desarrollo económico de México*. México: Inst. Investigaciones Econ., Escuela Nacional de Economía, 1960. Pp. 103. 20 pesos.
- DERRY, T. K. AND WILLIAMS, T. I. *A short history of technology—from the earliest times to A.D. 1900*. New York: Oxford Univ. Press, 1961. Pp. xviii, 782. \$8.50.
- DOORN, VAN A. *Axiologie en economie*. (Subjective value and its freedom in modern economics.) Franeker: Wever, 1960. Pp. 148. f 7.50.
- DUNNING, J. H. AND THOMAS, C. J. *British industry—change and development in the twentieth century*. London: Hutchinson, 1961. Pp. 232. 30s.
- EDGE, R. L. AND XIMENES, V. T. *Income and employment in New Mexico, 1949-1959*. Albuquerque: Bur. Bus. Research, Univ. of New Mexico, 1961. Pp. vii, 76. \$5.
- EINAUDI, L. *Cronache economiche e politiche di un trentennio (1893-1925)*. Vol. 4, 1914-1918. Turin: Giulio Einaudi, 1961. Pp. xxxv, 802. L. 4,000.
- ELLIS, H. S., ed. *El desarrollo económico y América Latina*. Proceedings of the International Economic Association Conference at Rio de Janeiro, 1957. (To be published in English) México: Fondo de Cultura Económica, 1960. Pp. 564. 32 pesos.
- EVERS, H. *Probleme der Regionalplanung in den Entwicklungsländern, Teil 1*. Cologne: Westdeutscher Verlag, 1960. Pp. 112. DM 28.
- FEARN, H. *An African economy—a study of the economic development of the Nyanza Province of Kenya 1903-1953*. New York: Oxford Univ. Press for East African Inst. of Soc. Research, 1961. Pp. xviii, 284. \$5.60.
- GOLAY, F. H. *The Philippines: public policy and national economic development*. Ithaca: Cornell Univ. Press, 1961. Pp. xviii, 455. \$6.75.
- GRÜNIG, F. *Die makroökonomischen Determinanten des Wirtschaftspotentials. Ein Beitrag zur langfristigen Vorausschätzung*. Berlin: Duncker & Humblot, 1960. DM 5.60.
- GULATI, I. S. *Resource prospects of the third five year plan*. Bombay: Orient Longmans, 1960. Pp. 154. Rs 10.
- HARRIS, S. E., ed. *American economic history*. New York: McGraw-Hill, 1961. Pp. ix, 560. \$7.95.
- HEERTJE, A. *De prijsvorming van consumptiegoederen op oligopolistische markten*. (Price formation of consumers' goods under oligopoly.) Leiden: Stenfert Groese, 1960. Pp. 111. f 12.00.
- HILTON, G. W. *The truck system including a history of the British Truck Acts, 1465-1960*. Cambridge, Eng.: W. Heffer, 1960. Pp. 166. 21s.
- HOSSELITZ, B. F., SPENGLER, J. J. AND OTHERS. *Theories of economic growth*. Glencoe, Ill.: Free Press, 1960. Pp. 344. \$7.50.
- KATKOFF, V. *Soviet economy 1940-1965*. Baltimore: Dargary, 1961. Pp. xi, 559. \$6.50.
- LAFFERRIERE, M. *Lyon ville industrielle*. Paris: Presses Univ. de France, 1960. Pp. 546. NF 30.
- LATOUCHE, R. *The birth of Western economy—economic aspects of the Dark Ages*. Transl. by E. M. Wilkinson. New York: Barnes & Noble, 1961. Pp. xviii, 341. \$7.50.

- Originally published in 1956 as *Les Origines de l'économie occidentale*. Paris: Albin Michel.
- LEONARDI, S. Sviluppo economico e decentramento nell'URSS. (Economic development and decentralization in the USSR.) Turin: Einaudi, 1960. Pp. 57.
- LEYS, C. AND PRATT, C., ed. A new deal in Central Africa. London: Heinemann, 1960. Pp. xiv, 226, 21s.
- MAILLET, P. La structure économique de la France. Paris: Presses Univ. de France, 1960. Pp. 128. NF 2.20.
- MANZOCCHI, B. Lineamenti di politica economica in Italia, 1945-1959. (Economic policy in Italy, 1945-1959.) Rome: Ed. Riuniti, 1960. Pp. 212.
- MAURO, F. Le Portugal et l'Atlantique au XVIIème siècle (1570-1670). Etude économique. Paris: S.E.V.P.E.N., 1960. Pp. 550. NF 45.
- MOORE, W. E. AND FELDMAN, A. S., ed. Labor commitment and social change in developing areas. New York: Soc. Sci. Research Council, 1960. Pp. xv, 378. \$3.75.
- NELSON, E., ed. Economic growth: rationale, problems, cases. Proceedings of the Conference on Economic Development Sponsored by the Department of Economics and the Institute of Latin American Studies at the University of Texas in 1958. Austin: Univ. of Texas Press, 1960. Pp. xv, 288. \$5.
- NORTH, D. C. The economic growth of the United States, 1790-1860. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xv, 304. \$6.75.
- PARES, R. Merchants and planters. *Econ. Hist. Rev.* Suppl., no. 4. London: Cambridge Univ. Press for the Econ. History Soc., 1960. Pp. 91. 10s 6d.
- PATINKIN, D. The Israel economy: the first decade. Jerusalem: Falk Project for Econ. Research in Israel, 1960. Pp. 155.
- PERNOUD, R. Histoire de la bourgeoisie en France. I., Des origines aux temps modernes. Paris: Edit. du Seil, 1960. Pp. 480. NF 15.
- PILLOTON, F. Effetti moltiplicativi degli investimenti della "Cassa per il Mezzogiorno." (Multiplier effects of the investments of the "Cassa per il Mezzogiorno.") Rome: SVIMEZ, 1960. Pp. 157.
- ROMEO, R. Risorgimento e capitalismo. (*Risorgimento* and capitalism.) Bari: Laterza, 1959. Pp. 208.
- DE ROOS, F. AND SCHOUTEN, D. B. J. Groetheorie. (The theory of growth.) Haarlem: Erven F. Bohn, 1960. Pp. 189. f 12.50.
- ROWAN, L. Arms and economics—the changing challenge. The Lees Knowles Lectures for 1960. New York: Cambridge Univ. Press, 1961. Pp. 64. 95¢.
- RUBNER, A. The economy of Israel—a critical account of the first ten years. London: Cass, 1960. Pp. xxiii, 307. 25s.
- SANTARELLI, A. Introduzione allo studio del problema industriale italiano. (Introduction to the study of the Italian industrial problem.) Padua: CEDAM, 1959. Pp. 208.
- SARACENO, P. Iniziativa privata e azione pubblica in un piano di sviluppo economico. (Private initiative and public intervention in a plan of economic development.) Rome: SVIMEZ, 1959. Pp. 100.
- SEGRÈ, C. Produttività e prezzi nel processo di sviluppo—L'esperienza italiana 1950-1957. (Productivity and prices in development process—the Italian experience.) Rome: SVIMEZ, 1959. Pp. 61.
- SEN, A. K. Choice of techniques—an aspect of the theory of planned economic development. Oxford, Eng.: Blackwell, 1960. Pp. 122. 18s.
- SINGER-KEREL, J. Le coût de la vie à Paris de 1840 à 1954. Paris: A. Colin, 1961. Pp. 560. NF 30.
- STUCKEN, R., ed. Untersuchungen einzelner Entwicklungsländer—Peru—Tunesien—Ägypten und Syrien. Berlin: Duncker & Humblot, 1950. DM 10.45.
- TERBORGH, G. Sixty years of business capital formation. Washington: Mach. and Allied

- Products Inst., and Council for Technological Advancement, 1960. Pp. 17. \$1.50.
- THEOBALD, R. The rich and the poor—a study of the economics of rising expectations. A Mentor paperback. New York: New American Lib., 1960. Pp. ix, 160. 50¢.
- WILSON, J. S. G. Economic environment and development programmes—an inaugural lecture delivered in the University of Hull on 5 May 1960. Hull: Univ. of Hull Pub., 1960. Pp. 20. 2s 6d.
- Analysis of the financial situation in Laos (report of Inpeng Souryadhay, 15 July 1960). New York: Joint Pub. Research Svce., 1960. Pp. 33.
- Area redevelopment—1961. Hearings before a subcommittee of the Senate Committee on Banking and Currency, 87th Cong., 1st sess., Jan. 18-26 and Feb. 20, 1961. Washington: Supt. Docs., 1961. Pp. 880.
- Atti del Congresso Internazionale di studio sul progresso tecnologico e la società italiana. (Proceedings of the International Congress on Technical Progress and Italian Society.) Milan, June 28-July, 1960. Milan: Centro Nazionale di Difesa e Prevenzione Sociale, 1960.
- The proceedings include a number of papers concerned with economic theory and policy in the field of economic development.
- Croissance économique et structures sociales. Paris: Cujas, 1960. Pp. 100. NF 4.50.
- El desarrollo económico de la Argentina. México: UN Comisión Econ. para América Latina, 1959. Pp. 128.
- El desarrollo industrial del Perú. México: UN Comisión Econ. para América Latina, 1959. Pp. 335.
- Development of the national economy and culture of the People's Democratic Republic of Korea 1946-1959—statistical handbook. New York: Joint Pub. Research Svce., 1960. Pp. 132.
- An economic atlas for West Virginia. Econ. stat. ser. 1. Charleston: West Virginia Econ. Develop. Agency, 1960. Pp. 24. Free.
- The economic development of Tanganyika—report of a mission organized by the International Bank for Reconstruction and Development at the request of the Governments of Tanganyika and the United Kingdom. Baltimore: Johns Hopkins Press for Internat. Bank for Recon. and Develop., 1961. Pp. xxviii, 548. \$8.50.
- Estudio económico de América Latina. Santiago de Chile: Comisión Económica para América Latina, 1959.
- General industrial survey of seventeen industries for Viet Nam. Washington: Tech. Aids Branch, Office of Indus. Resources, Internat. Coop. Admin., 1959. Pp. 234.
- Copies of this publication are not available for distribution in the United States.
- Growth in the British economy—a study of economic problems and policies in contemporary Britain. London: Allen & Unwin for PEP; New York: Oxford Univ. Press, distrib., 1960. Pp. xii, 256. \$4.08.
- The Institute of Economic Research; research, publications and other activities 1958-1960. Report of the director (Joseph Grunwald). Santiago, Chile: Inst. of Econ. Research, Univ. of Chile, 1961. Pp. v, 19.
- Interdipendenze strutturali dell'economia siciliana del 1958. (Input-output analysis of the Sicilian economy.) Palermo: Morgnino for Bank of Sicily, 1960. Pp. 74.
- Manual de proyectos de desarrollo económico. Programa CEPAL. México: AAT, 1959. 40 pesos.
- México. Cincuenta años de revolución. I, La economía. México: Fondo de Cultura Económica, 1960. Pp. 619. 40 pesos.
- Problèmes du développement régional. Paris: Cujas, 1960. Pp. 124. NF 4.50.
- Programming techniques for economic development; with special reference to Asia and the Far East. Report of the first group of experts on programming techniques. Develop. programming techniques ser. no. 1. Bangkok: UN Econ. Commission for Asia and the Far East, 1960. Pp. ix, 27. \$1.

- The Soviet Seven Year Plan: a survey of economic progress and potential in the U.S.S.R. London: Phoenix House, 1960. Pp. 126. 10s 6d.
- Statistics and data for a study of the development of the People's economy—1949-1955—Hungary. Washington: Joint Pub. Research Svce., 1961. Pp. 327.
- Steps toward economic expansion in New York State: report. New York: Temporary State Commission on Econ. Expansion, 1960. Pp. 152.
- Stime sui consumi privati in Italia nel prossimo decennio. (Estimate of private consumption in Italy in the next decade.) Rome: SVIMEZ, 1960. Pp. 83.
- The success of the 1959 plan and the struggle to achieve the 1960 plan and the three-year plan—North Vietnam. New York: Joint Pub. Research Svce., 1960. Pp. 98.

Statistical Methods; Econometrics; Social Accounting

- DUNCAN, O. D., CUZZORT, R. P. AND DUNCAN, B. Statistical geography—problems in analyzing areal data. Glencoe, Ill.: Free Press, 1961. Pp. vii, 191. \$6.
- GÜLICH, W., ed. Volkswirtschaftliche Gesamtrechnung. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1960. Pp. viii, 260.
- HASHIMI, R. M. H. Studies in functional income distribution. Occas. paper no. 3. East Lansing: Bur. Bus. and Econ. Research, Grad. School Bus. Admin., Michigan State Univ., 1960. Pp. 54. 50¢.
- LIEBERMAN, G. J. AND OWEN, D. B. Tables of the hypergeometric probability distribution. Stanford stud. in math. and stat. 3. Stanford: Stanford Univ. Press, 1961. Pp. vi, 726. \$15.
- NELSON, B. L. Elements of modern statistics—for students of economics and business. New York: Appleton-Century-Crofts, 1961. Pp. ix, 365. \$6.
- RAIFFA, H. AND SCHLAIFER, R. Applied statistical decision theory. Boston: Div. Research, Grad. School of Bus. Admin., Harvard Univ., 1961. Pp. xxviii, 356. \$9.50.
- ROUX, J. L'organisation scientifique de l'économie nationale. Vol. 1., La comptabilité nationale intégrale. Tableau de bord de la vie économique des Nations. Paris: Inst. de Stat. et d'Etudes Econ. et Fin., 1960. Pp. 394.
- RUTHERFORD, R. S. G. Basic mathematics for students of economics. Sydney: West Pub. Corp. for Univ. Co-op. Bookshop, Sydney, 1960. Pp. vii, 126. 25s.
- SCHLAIFER, R. Introduction to statistics for business decisions. New York: McGraw-Hill, 1961. Pp. x, 382. \$7.75.
- STUDENSKI, P. The income of nations. Pt. 1, History. Pt. 2, Theory and methodology. With corrections and emendations, Original ed. 1958. New York: New York Univ. Press, 1961. Pp. xiv, 185; xiv, 153. Paper, \$2.50; \$2.25.
- VAJDA, S. An introduction to linear programming and the theory of games. London: Methuen; New York: Wiley, 1960. Pp. 76. 9s 6d.
- Better statistics in Korea—an interim report to the government of the Republic of Korea. Seoul: Stat. Advisory Group Surveys & Research Corp., 1960. Pp. iii, 50, 44.
- Government price statistics. Hearings before the Subcommittee on Economic Statistics of the Joint Economic Committee, Pt. 1, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 526. \$1.50.
- Proceedings of the Social Statistics Section, 1960. Washington: American Statistical Association, 1960. Pp. 211.

Economic Systems; Planning and Reform; Cooperation

- CORONA RENTERÍA, A. La planeación económica con especial referencia a los problemas regionales. México: Fon Pra Cosa Mex., 1959. Pp. 171.
- GALLEGOS ROCAFULL, J. M. La visión cristiana del mundo económico. Madrid: Taurus, 1959. Pp. 310. 35 pesos.

- LANGE, O. *Essays on economic planning*. London: Asia Publishing House; Calcutta: Stat. Pub. Society, 1960. Pp. iv, 72. 36s.
- LUBRANO-LAVADERA, M. *Les marchés de l'état et des collectivités locales*. Paris: Berger-Levrault, 1960. Pp. 288. NF 20.
- MANOUSSOS, G. *Inflation, croissance et planification*. Paris: Minard; Genève: Droz, 1961. Pp. xl, 344. Sw. fr. 40.
- MEYER, A. G. *Communism*. New York: Random House, 1960. Pp. 217. \$1.95.
- "This introduction to communism in its various guises and functions is intended for a broad public of advanced and beginning students, policy-makers, and the proverbial intelligent layman—for anyone, in short, who wants to study the subject with a minimum of political passion." (From the preface.)
- PERROUX, F. *Economie et société—Contrainte, échange, don*. Paris: Presses Univ. de France, 1960. Pp. 188. NF 6.
- ROSENTHIEHL, P. AND GHOUILA-HOURI, A. *Les choix économiques. Décisions séquentielles et simulation*. Paris: Dunod, 1960. Pp. xx, 360. NF 47.
- Ekonomicheskie zakony socializma i ikh ispolzovanye—sbornik statey.* (Economic laws of socialism and their application—collection of articles.) Moscow: Publ. House for socio-economic lit., 1960. Pp. 426.

Business Fluctuations

- BOMBACH, G., ed. *Stabile Preise in wachsender Wirtschaft: das Inflationsproblem*. In honor of Erich Schneider's 60th birthday. Tübingen: J. C. B. Mohr (Paul Siebeck), 1960. DM 29.80.
- GROVE, D. L. *Las fluctuaciones económicas en Estados Unidos y América Latina*. México: Centro Estud. Monetarios Latino-americanos, 1959. Pp. 158. 23 pesos.
- HOFFMEYER, E. *Stabile Priser og fuld beskæftelse*. Copenhagen: Bikuben, 1960. Pp. 277.
- TUÑÓN CRUZ, A. *Política económica de la inflación (Estudio del tiempo bélico)*. Madrid: Aguilar, 1959. Pp. 143. 35 pesos.
- WILSON, T. *Inflation*. Cambridge: Harvard Univ. Press, 1961. Pp. 280. \$5.50.
- Current economic situation and short-run outlook. Hearings before the Joint Economic Committee, 86th Cong. 2nd sess., Dec. 7 and 8, 1960. Washington: Supt. Docs., 1961. Pp. iv, 266. 70¢.
- Employment, growth, and price levels. Index to hearings before the Joint Economic Committee with tables of contents of study papers and staff report, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. vii, 94. 30¢.
- A joint statement on the rise of chronic unemployment. Washington: Nat. Planning Assoc., 1961. Pp. 45, mimeo.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- AUBURN, H. W., ed. *Comparative banking in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, U.S.A., U.S.S.R.* London: Waterlow, 1960. Pp. x, 118. 17s 6d.
- AYMARD, P. *La banque et l'état: la politique économique et l'évolution des techniques bancaires en France depuis 1945*. Paris: Armand Colin, 1960. Pp. 289. NF 14.
- BLESSING, K. *Die Verteidigung des Geldwertes*. Frankfurt am Main: Fritz Knapp, 1960. DM 19.80.
- BUTT, P. D. *Branch banking and economic growth in Arizona and New Mexico*. New Mexico stud. in bus. and econ. no. 7. Albuquerque: Bur. of Bus. Research, College of Bus. Admin., Univ. of New Mexico, 1960. Pp. ix, 39. \$3.
- CAMPBELL, C. D. *The Federal Reserve and the business cycle*. Tuck bull. 26. Hanover: Amos Tuck School, Grad. School of Bus. Admin., Dartmouth College, 1961. Pp. 15.

- DAHLBERG, A. Money in motion—a graphic portrayal of the nature of money and the American monetary system. New York: John de Graff, 1961. Pp. xvii, 141. \$5.95.
- DELL'AMORE, G. Introduzione allo studio del mercato del credito. (Introduction to the study of the credit market.) Milan: Giuffrè, 1960. Pp. ix, 220.
- DIETERLIN, P., ed. La restauration des monnaies européennes. Special no. *Rev. d'Econ. Politique*. Paris: Sirey, 1960. Pp. 214. NF 23.
- FOUSEK, P. G. Los instrumentos de la política monetaria. México: Centro de Estud. Monetarios Latinoamericanos, 1959. Pp. 189. 23 pesos.
- FRANKS, O. Some reflections on monetary policy in the light of the Radcliffe Report. New York: Asia Pub. House; New York: Taplinger, distrib., 1960. Pp. viii, 72. \$2.25.
- HAINES, W. W. Money, prices, and policy. New York: McGraw-Hill, 1961. Pp. xvii, 780. \$7.95.
- HOAG, W. G. Banks for cooperatives: quarter century of progress. Washington: Farm Credit Admin., 1960. Pp. 87.
- IRVING, J. A. The social credit movement in Alberta. Toronto: Univ. of Toronto Press, 1959. London: Oxford Univ. Press, 1960. Pp. xii, 369. 48s.
- KNIGHT, H. M. Introducción al análisis monetario. México: Centro de Estud. Monetarios Latinoamericanos, 1959. Pp. 204. 25 pesos.
- KRONROD, Y. A. Dengi v socialisticheskoy obshchestve Ocherki teorii. (Money in the socialist society—theoretical outlines.) 2nd rev. ed. Moscow: Publ. House for Finance, 1960. Pp. 424.
- LYON, R. A. Investment portfolio management in the commercial bank. New Brunswick: Rutgers Univ. Press, 1960. Pp. 210. \$4.50.
- MIRABELLA, G. L'unificazione monetaria della Comunità Economica Europea. Palermo: Seminario Econ. Pol. e Sci. d. Fin., Univ. degli Stud. Palermo, 1960. Pp. 89.
- PAYNE, W. F. Industrial demands upon the money market. 1919-57: a study in fund-flow analysis. Tech. paper 14. New York: Nat. Bur. of Econ. Research, 1961. Pp. xix, 139. \$1.50.
- PESENTI, A. Lezioni di economia politica—la moneta. (Lectures on economics—money.) Rome: Ed. Riuniti, 1958. Pp. 203.
- RITTER, L. S., ed. Money and economic activity—readings in money and banking. 2nd ed. Boston: Houghton Mifflin, 1961. Pp. xiv, 457. \$4.50.
- SÁNCHEZ CUÉN, M. El crédito a largo plazo en México. Reseña histórica. México: Gráfica Panamericana, 1959. Pp. 301.
- SCHIEFFER, C. F. AND SMEETS, M. J. H. Geld en Overheid. De kringloop van het geld en de invloed van de overheid. (Money and the government. An analysis of money-flows and the government's influence.) Utrecht: Het Spectrum, 1960. Pp. 224. f. 1.90.
- WATSON, G. M. El Banco de Inglaterra. México: Centro de Estud. Monetarios Latinoamericanos, 1960. Pp. 144. 18 pesos.
- The Federal Reserve System: purposes and functions. Washington: Board of Governors of the Federal Reserve System, 1961. Pp. xvi, 238.
- Inwieweit ist die schleichende Inflation durch monetäre Massnahmen zu bekämpfen? Report of the meeting of the Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute in Bad Godesberg June 1960. Berlin: Duncker & Humblot, 1960. DM 19.80.

Public Finance; Fiscal Policy

- ALBERS, W. AND WEISE, H. Wettbewerbsverschiebungen durch die unterschiedliche Steuerbelastung von Produktionsmitteln in der europäischen Integration. Kieler stud. 55. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1960. Pp. xiv, 403. DM 48.
- BLOCH-LAINÉ, F., AND DE VOCÛÉ, P. Le trésor public et le mouvement général des fonds. Paris: Presses Univ. de France, 1960. Pp. 372. NF 20.

- BRAZER, H. E. *Taxation in Michigan: an appraisal*. Michigan pamph. no. 30. Ann Arbor: Inst. of Pub. Admin., Univ. of Michigan, 1961. Pp. 41. \$1.
- COPELAND, M. A. *Trends in government financing*. Nat. Bur. Econ. Research stud. no. 7. Princeton: Princeton Univ. Press, 1961. Pp. xxvi, 210. \$5.
- FERGUSON, E. J. *The power of the purse—a history of American public finance, 1776-1790*. Chapel Hill: Univ. of North Carolina Press for Inst. of Early American History and Culture, 1961. Pp. xvi, 358. \$7.50.
- GIERSCHE, H.-H. *Investitionsfinanzierung und Besteuerung*. Wiesbaden: Gabler, 1961. DM 9.80.
- LACOUR-GAYET, R. *Les renaissances financières de la France de Saint-Louis à Poincaré*. Paris: Hachette, 1959. Pp. 254.
- MCCRACKEN, P. W., ed. *Taxes and economic growth in Michigan: a study undertaken at the request of the Committee on Michigan's Economic Future*. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1960. Pp. xi, 167. \$4.75.
- NORTCLIFFE, E. B. *Common market fiscal systems*. London: Sweet & Maxwell, 1960. Pp. 90. 21s.
- OWENS, E. A. *The foreign tax credit*. Cambridge: Harvard Law School Internat. Program in Taxation, 1960. Pp. 666. \$20.
- PARRAVICINI, G. *La politica fiscale e le entrate effettive nel Regno d'Italia 1860-1890* (Fiscal policy and budget receipts in the Italian Kingdom 1860-1890.) Turin: ILTE, 1958. Pp. 617.
- PATTERSON, R. T. *The tax exemption of cooperatives*. Rev. ed. New York: Univ. Pub. Inc., for Claremont Men's College, 1961. Pp. xii, 140. \$5.
- "Professor Patterson has carefully explored the social and economic arguments for these exemptions. His conclusions will not satisfy every reader, particularly friends of cooperatives." (From the foreword by the President of Claremont Men's College.)
- PIROZYNSKI, Z. AND WINTER, E. *General principles of the Polish financial system*. Washington: Joint Pub. Research Svce., 1961. Pp. 50.
- RÄDLER, A. J. *Die direkten Steuern der Kapitalgesellschaften und die Probleme der Steueranpassung in den sechs Staaten der Europäischen Wirtschaftsgemeinschaft*. Amsterdam: Internat. Bur. Fiscal Doc., 1960. Pp. 284. \$8.
- TAYLOR, P. E. *The economics of public finance*. 3d ed. New York: Macmillan, 1961. Pp. xviii, 588. \$7.50.
- TRIPATHY, R. N. *Federal finance in a developing economy*. Calcutta: World Press, 1960. Pp. xvi, 239. Rs 15.
- Coordination of state and federal inheritance, estate and gift taxes—a report of the Advisory Commission on Intergovernmental Relations*. Washington: Supt. Docs., 1961. Pp. 134.
- Detail of state tax collections in 1959*. Washington: Bur. of the Census, 1959. Pp. 30.
- Financial management in the federal government—a comprehensive analysis of existing and proposed legislation including financial management improvements made on a government-wide basis*. Senate Committee on Government Operations, 86th Cong., 2nd sess., Dec. 30, 1960. Washington: Supt. Docs., 1961. Pp. 366.
- Growth and taxes—steps for 1961*. CED statement on nat. pol. New York: Com. for Econ. Develop., 1961. Pp. 53.
- Profit sanctuaries and how they are used*. New York: Bus. Internat., 1960. Pp. 54. \$30 for non-subscribers.
- The proposed 23rd amendment to the Constitution to repeal the 16th amendment to the Constitution which provides that Congress shall have power to collect taxes on incomes: a study made by the staff of the Joint Economic Committee to determine the effects of its adoption*. 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 26.
- Public finances: needs, sources and utilization—a conference of the Universities-National*

- Bureau Committee for Economic Research. Spec. conf. ser. vol. 12. Princeton: Princeton Univ. Press for Nat. Bur. of Econ. Research, 1961. Pp. xiv, 512. \$10.
- A study of the dealer market for federal government securities. Materials prepared for the Joint Economic Committee, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. ix, 144. 40¢.
- Ten-year projection of federal budget expenditures. Special study. Washington: U.S. Bur. of the Budget, 1961. Pp. 72.
- A topical comparison of United States income tax conventions. Prepared by the staff of the Joint Committee on Internal Revenue Taxation for the use of the Senate Committee on Foreign Relations. Washington: Supt. Docs., 1960. Var. pp.

International Economics

- ANIKIN, A. V. Valutnyye problemy Sapsadnoy Evropy. (Foreign exchange problems of Western Europe.) Moscow: Inst. of Internat. Relations, 1960. Pp. 179.
- BRAUERS, W. K. Handboek voor internationale prognose en planning. (An introduction to forecasting the consequences of Western European integration.) Antwerp and Amsterdam: Standaard, 1960. Pp. 96. f 10.00.
- DEL CUESTO, H. H. Cuando el peso valía más que el dólar (Ensayo histórico de las devaluaciones monetarias en México.) México: Impresora Juan Pablos, 1959. Pp. 401. 25 pesos.
- DELL, S. S. Problemas de un mercado común en América Latina. México: Centro de Estud. Monetarios Latino-americanos, 1959. Pp. 219. 25 pesos.
- FEDE, C. Gli investimenti esteri. (Foreign investments.) Padua: CEDAM, 1959. Pp. 201.
- FRIEDMAN, I. S. El control de cambios. México: Centro de Estud. Monetarios Latino-americanos, 1959. Pp. 194. 23 pesos.
- GEIGER, T. The General Electric Company in Brazil. U.S. Bus. Performance Abroad case stud., 9. Washington: Nat. Planning Assoc., 1961. Pp. x, 106. \$1.
- HABERLER, G. Growth and balance in world trade—a challenge to American foreign economic policy. The Galen L. Stone Inaugural Lecture, Dec. 1957. Cambridge: Harvard Univ. Press, s.d. Pp. 21. 50¢.
- HARTOG, F. Het economisch wereldbestel. (International economics.) Bussum: Ruys, 1960. Pp. 217. f 14.50.
- HENRIKSEN, O. B. AND ØLGÅRD, A. Danmarks udenrigshandel 1874-1958. Copenhagen: Gads, 1960. Pp. 133. DKr. 25.
- KRAUSE, W. American agricultural surpluses and foreign economic development. Stud. bus. & econ. n.s. no. 8. Iowa City: State Univ. Iowa Bur. Bus. and econ. research, 1960. Pp. 36. \$1.
- KRISTENSEN, T. AND OTHERS. The economic world balance. Copenhagen: Munksgaard, 1960. Pp. 377.
- LINDEMAN, J. AND ARMSTRONG, D. Policies and practices of United States subsidiaries in Canada. Washington: Nat. Planning Assoc. (U.S.A.) and Private Planning Assoc. of Canada, 1960. Pp. xi, 82. \$2.
- MACDOUGALL, D. The dollar problem: a reappraisal. Essays in internat. fin. no. 35. Princeton: Internat. Fin. Sec. Dept. Econ., Princeton Univ., 1960. Pp. 76.
- MARGET, A. W. AND TRIFFIN, R. Los pagos internacionales y la política monetaria. Mexico D.F.: Centros de Estudios Monetarios Latinoamericanos, 1959. Pp. 175. 25 pesos.
- MASSAD, C. AND STRASMA, J. La zona de libre comercio en América Latina—algunos problemas por resolver. Pub. no. 38. Santiago: Inst. de Econ., Univ. de Chile, 1961. Pp. viii, 39.
- MEYER, F. V. The European Free-Trade Association; an analysis of "the outer seven." New York: Praeger; London: Barrie & Rockliff with the Pall Mall Press, 1960. Pp. viii, 140. 18s.

- NOVE, A. AND DONNELLY, D. Trade with communist countries. New York: Macmillan for Inst. Econ. Affairs, 1960. Pp. 183. \$6.
- OCHOA CAMPOS, R. Los movimientos de capital en la balanza de transacciones económicas en México. México, 1959. Pp. 126.
- PAPI, G. U. Economia internazionale. (International economics.) Turin: UTET, 1959. Pp. 539.
- PIQUET, H. S. Gold and the United States balance of payments deficit. Prepared by Library of Congress, Legislative Reference Service for the House Committee on Foreign Affairs, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 50.
- RÖPKE, W. International order and economic integration. Dordrecht: Reidel, 1960. Pp. viii, 276. Fl. 22.50.
- SALANT, W. S. AND VACCARA, B. N. Import liberalization and employment—the effects of unilateral reductions in United States import barriers. Washington: Brookings Inst., 1961. Pp. xix, 388. \$6.75.
- SCOTT, W. G. Gli investimenti esteri in Italia. (Foreign investments in Italy.) Milan: Centro Studi e Ricerche sulla Struttura Economica Italiana Dell'Istituto Feltrinelli, 1960. Pp. 144.
- SHEPHERD, S. A. Foreign exchange in Canada: an outline. 3rd ed. Toronto: Univ. of Toronto Press, 1961. Pp. xii, 265. \$5.95.
- SHONFIELD, A. The attack on world poverty. New York: Random House, 1960. Pp. xii, 269. \$5.
- SMIRNOV, A. M. International currency and credit relations of the USSR. New York: Joint Pub. Research Svce., 1960. Pp. 219.
- SOHMEN, E. Flexible exchange rates—theory and controversy. Chicago: Univ. of Chicago Press, 1961. Pp. xiv, 172. \$5.
- TOW, B. The International Monetary Fund: its present role and future prospects. Essays in internat. fin. no. 36. Princeton: Internat. Fin. Section, Dept. of Econ., Princeton Univ., 1961. Pp. 41.
- Background documents relating to the Organization for Economic Cooperation and Development. Prepared by Senate Committee on Foreign Relations. Washington: Supt. Docs., 1961. Pp. 40.
- Europe and the world economy. Eleventh annual economic review. Paris: O.E.E.C., 1960. Pp. 138. 9s.
- Investing & licensing conditions in 37 countries. Bus. Internat. research rept. New York: Bus. Internat., 1960. Pp. 154. \$60, nonsubscribers.
- Perspectivas del comercio exterior chileno 1960-1965. Revisión a septiembre de 1960. Boletín inf. no. 4. Santiago, Chile: Inst. de Econ., Univ. de Chile, 1960. v.p.
- El programa de integración económica de centroamérica. Ministerio de Economía. San Salvador: Ed. Ahora, 1959. Pp. 82.
- A survey of the strategic trade control program 1957-1960. Mutual Defense Assistance Control Act of 1951, 14th report to Congress by Dept. of State. Washington: Supt. Docs., 1960. Pp. 50. 25¢.
- The United States balance of payments position. Report of the Committee on Economic Policy. Washington: Chamber of Commerce of the U.S.A., 1961. Pp. 60.
- Vneshnyaya torgovlya SSSR za 1918-1940 gg. Stat. Obsor. (Foreign trade of the USSR in 1918 to 1940, stat. survey.) Moscow: Publ. House for Foreign Trade, 1960. Pp. 1135.

Business Finance; Investment and Security Markets; Insurance

- BAUMGART, E., KRENGEL, R. AND MORITZ, W. Die Finanzierung der industriellen Expansion in der Bundesrepublik während der Jahre des Wiederaufbaus. Berlin: Duncker & Humblot, 1960. DM 13.60.

HAYES, D. A. *Investments: analysis and management*. New York: Macmillan, 1961. Pp. x, 598, \$7.50.

MOWBRAY, A. H. AND BLANCHARD, R. H. *Insurance—its theory and practice in the United States*. 5th ed. New York: McGraw-Hill, 1961. Pp. xiii, 617. \$7.50.

ROSE, H. B. *The economic background to investment*. London: Cambridge Univ. Press for the Inst. of Actuaries and the Faculty of Actuaries, 1960. Pp. xi, 661. 40s.

SHAH, K. C. *Pattern of corporate savings and investments*. Bombay: G. R. Bhatkal for Popular Book Depot, 1960. Pp. xvi, 263. Rs 15.

Primarily concerned with the growth and significance of the corporate sector in India—broad financial trends, finance of particular industries, corporate income retention, problems and prospects.

Business Organization; Managerial Economics; Marketing; Accounting

ALBERS, H. H. *Organized executive action: decision-making, communication, and leadership*. New York: Wiley, 1961. Pp. xii, 604. \$8.50.

BUCKINGHAM, W. *Automation—its impact on business and people*. New York: Harper, 1961. Pp. ix, 196. \$4.50.

CHOFFEL, J. *Saint-Gobain—Du miroir à l'atome*. Paris: Plon, 1960. Pp. 160. NF 7.50.

CHURCHMAN, C. W. *Prediction and optimal decision—philosophical issues of a science of values*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xiv, 394. \$6.75.

DANIELLS, L. M., comp. *Business forecasting for the 1960's—a selected, annotated bibliography*. Cambridge: Baker Lib. Grad. School of Bus. Admin., Harvard Univ., 1960. Pp. 41. \$1.

DANØ, S. *Linear programming in industry. Theory and applications*. Vienna: Springer, 1960. Pp. 120. \$4.75.

D'YDEWALLE, C. *L'Union minière du Haut-Katanga*. Paris: Plon, 1960. Pp. 192. NF 7.50.

FENN, D. H., JR., ed. *Managing America's economic explosion*. New York: McGraw-Hill, 1961. Pp. xiv, 269. \$6.

The volume is based on a national business conference held at Harvard University. The problems discussed were those concerned with economic growth and inflation—particularly from the point of view of management of business enterprise.

GENTRY, D. L. AND TAFF, C. A. *Elements of business enterprise*. New York: Ronald Press, 1961. Pp. vi, 705. \$7.

GLOVER, J. D. AND LAWRENCE, P. R. *A case study of high level administration in a large organization—the office of the Assistant Secretary of the Air Force (management) 1947-1952*. Boston: Harvard Univ.-Div. Research, Grad. School of Bus. Admin., 1960. Pp. vi, 120. \$2.

GORDON, R. A. *Business leadership in the large corporation*. Paper-bound ed., with a new preface. Berkeley and Los Angeles: Univ. California Press, in co-op. with the Brookings Institution, 1961. Pp. xvii, 364. \$1.95.

GRANICK, D. *The Red executive—a study of the organization man in Russian industry*. London: Macmillan, 1960. Pp. 334. 21s.

GROSS, A. *Sales promotion—principles and methods for intensifying marketing effort*. 2nd ed. New York: Ronald, 1961. Pp. vi, 504. \$8.50.

JEROME, W. T., III. *Executive control—the catalyst*. New York: Wiley, 1961. Pp. xiii, 275. \$6.95.

LE BRETON, P. P. AND HENNING, D. A. *Planning theory*. Englewood Cliffs: Prentice-Hall, 1961. Pp. xiv, 375. \$6.75.

The book is concerned with planning "at all levels of the business enterprise."

LESOURNE, J. *Technique économique et gestion industrielle*. Paris: Dunod, 1960. Pp. xlv, 627. NF 58.

- MAC NIECE, E. H. Production forecasting, planning, and control. 3rd ed. New York: Wiley, 1961. Pp. x, 402. \$9.75.
- ONIDA, P. *Economia di azienda*. (The economics of the firm.) Turin: UTET, 1960. Pp. 790.
- PICORS, P. AND MYERS, C. A. Personnel administration—a point of view and a method. 4th ed. New York: McGraw-Hill, 1961. Pp. x, 749. \$7.95.
- RICH, E. E. Hudson's Bay Company, 1670-1870. Vol. 2. 1763-1870. London: The Hudson's Bay Record Soc., 1959. Pp. 975.
- SCOTT, W. D., CLOTHIER, R. C. AND SPRIEGEL, W. R. Personnel management—principles, practices, and point of view. 6th ed. New York: McGraw-Hill, 1961. Pp. x, 623. \$7.75.
- SEDILOT, R. PEUGEOT. Paris: Plon, 1960. Pp. 192. NF 7.50.
- SMYKAY, E. W., BOWERSOX, D. J. AND MOSSMAN, F. H. Physical distribution management—logistics problems of the firm. New York: Macmillan, 1961. Pp. xiv, 283, \$6.
- TERLECKYJ, N. E. Help-wanted advertising as a business indicator. Tech. paper no. 9. New York: Nat. Indus. Conf. Board, 1961. Pp. 66. \$3 Associates, \$15 non-Associates.
- ZIEGLER, R. J. Principles of industrial management case book. New York: Macmillan, 1961. Pp. xii, 246. \$3.50.
- Administration of electronic data processing. Stud. in bus. policy, no. 98. New York: Nat. Ind. Conf. Board, 1961. Pp. 136. \$5 for Associates.
- Current application of direct costing. Research rept. no. 37. New York: Nat. Assoc. of Accountants, 1961. Pp. 108. \$2.
- La gestion prévisionnelle des entreprises industrielles et commerciales. Paris: Edit. de l'Entreprise moderne, 1960. Pp. 180.
- Management in the scientific age—proceedings 1958 annual conference of the Washington chapter Society for Advancement of Management, Dec. 11, 1958. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1961. Pp. xii, 80. Free.
- Services for small-scale industry. Stud. and rept. n. s. no. 61. Geneva: Internat. Lab. Office, 1961. Pp. vi, 204. \$2.

Industrial Organization; Government and Business; Industry Studies

- ANDREWS, P. W. S. AND FRIDAY, F. A. Fair trade—resale price maintenance re-examined. New York: St. Martin's Press; London: Macmillan, 1960. Pp. 84. \$2.
- ARNDT, H., ed. Die Konzentration in der Wirtschaft. Vol. 1, Stand der Konzentration. Vol. 2, Ursachen der Konzentration. Vol. 3, Wirkungen und Probleme der Konzentration. Berlin: Duncker & Humblot, 1960. Pp. xv, 785; vi, 682; iv, 453. DM 78.60; DM 69.80; DM 58.60.
- BARAJAS MANZANO, J. Aspectos de la industria del algodón en México. México: Inst. de Investigaciones Econ., 1959. Pp. 178. 17 pesos.
- BONBRIGHT, J. C. Principles of public utility rates. New York: Columbia Univ. Press, 1961. Pp. xii, 433. \$10.
- CASTELLANO, C. La politica antimonopolistica negli Stati Uniti. (The U.S. anti-trust policy.) Rome: Roma Istituto Cartografico Italiano, 1960. Pp. 100.
- DIMOCK, M. E. Business and government—issues of public policy. 4th ed. New York: Holt, Rinehart and Winston, 1961. Pp. vi, 505. \$6.75.
- DUBINSKY, L. S. Monopolii i ekonomika Anglii (do vtoroy mirovoy voyny). [Monopolies and the British economy (before the Second World War).] Moscow: Publ. House for Socioeconomic lit., 1960. Pp. 478.
- ELLIS, L. E. Newsprint: producers, publishers, political pressures. Including the text of Print paper pendulum: group pressures and the price of newsprint. New Brunswick: Rutgers Univ. Press, 1960. Pp. vi, 215. \$7.50.
- GARANGER, A. Petite histoire d'une grande industrie (Machines—outils). Paris: Edit. S.E.M.M.O., 1960. Pp. 288. NF 50.

- GREENLEAF, W. Monopoly on wheels—Henry Ford and the Selden automobile patent. Detroit: Wayne State Univ. Press, 1961. Pp. xii, 302. \$5.95.
- HARRISON, G. An analytical history of the patent policy of the Department of Health, Education, and Welfare: study of the Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961.
- HAY, W. W. An introduction to transportation engineering. New York: John Wiley, 1961. Pp. xiii, 505. \$11.75.
- HUGHES, J. Nationalised industries in the mixed economy. Fabian tract 328. London: Fabian Society, 1960. Pp. 40. 4s.
- LANDIS, J. M. Report on regulatory agencies to the President-elect. 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 87.
- MUND, V. A. Government and business. 3rd ed. New York: Harper, 1960. Pp. x, 548. \$7.
- MUNTHE, P. Horisontale karteller. Oslo: Universitetsforlaget, 1960. Pp. 170.
- NEUNER, E. J. The natural gas industry—monopoly and competition in field markets. Norman: Univ. of Oklahoma Press, 1960. Pp. xx, 302. \$5.75.
- OORT, C. J. La théorie marginaliste et les prix de transport—une analyse. Rotterdam: Fondation Verkeerswetenschappelijk Centrum, 1960. Pp. 93. Fl. 10.
- PARKINSON, J. R. The economics of ship-building in the United Kingdom. Univ. of Glasgow soc. and econ. stud. 6. London: Cambridge Univ. Press, 1960. Pp. xii, 227. 40s.
- PEYRET, H. La stratégie du fer. Paris: Presses Univ. de France, 1960. Pp. 128. NF 2.20.
- ROBSON, W. A. Nationalized industry and public ownership. London: Allen & Unwin, 1960. Pp. 544. 50s.
- SIEBKER, M. Die Möglichkeiten der Atomkerntechnik für die beschleunigte wirtschaftliche Entfaltung von Entwicklungs-ländern. Cologne: Westdeutscher Verlag, 1960. Pp. 174. DM 43.30.
- Administered prices. Administered prices in the drug industry. Pt. 25, Antibiotics—appendix A. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. 1125.
- Independent regulatory commissions—staff report of the Special Subcommittee on Legislative Oversight of the House Committee on Interstate and Foreign Commerce, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 263.
- The insurance industry. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 86th Cong., 2nd sess., May 24-27 and June 16-17, 1960. Washington: Supt. Docs., 1961. Pp. 656.
- National transportation policy—preliminary draft of a report prepared by the Special Study Group on Transportation Policies in the United States, for the Senate Committee on Interstate and Foreign Commerce, 87th Cong., 1st sess., Jan. 3, 1961. Washington: Supt. Docs., 1961. Pp. 732.
- Patent practices of the Federal Aviation Agency: preliminary report of the Subcommittee on Patents, Trademarks and Copyrights of the Senate Committee on the Judiciary, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. 70.
- Small business problems in food distribution. Report of Subcommittee no. 5 on Distribution Problems Affecting Small Business of the House Select Committee on Small Business, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. 225.
- Textile outlook for the sixties. U.S. Dept. of Commerce, Bus. and Defense Services Administration. Washington: Supt. Docs., 1960. Pp. viii, 54. 35¢.

This study reviews the major factors to be taken into account in making projections of the future industrial and consumer demand for textile products. The economist will find particularly interesting the figures showing correlations between disposable personal income and various classes of consumption expenditure for the period 1946-58.

Transport statistics in the United States for the year ended December 31, 1959. Pt. 1, railroads, their lessors, and proprietary companies. Washington: Bur. Transport Econ. and Stat., Interstate Commerce Commission, 1960. Pp. 566.

Transport statistics in the United States for the year ended December 31, 1959. Pt. 7, motor carriers. Washington: Bur. Transport Econ. and Stat., Interstate Commerce Commission, 1960. Pp. 67.

Land Economics; Agricultural Economics; Economic Geography; Housing

BANDINI, M. *Economía agraria*. (Agricultural economics.) Turin: UTET, 1959. Pp. 756.

DÍAZ SOTO Y GAMA, A. *La cuestión agraria en México*. México: Univ. Nacional Autónoma de México, 1959. Pp. 140. 30 pesos.

DUNCAN, B. AND HAUSER, P. M. *Housing a metropolis—Chicago*. Glencoe, Ill.: The Free Press, 1960. Pp. xxii, 278. \$7.50.

FEDER, E. *El crédito agrícola en Chile*. Pub. no. 29. Santiago: Inst. Econ. Univ. Chile, 1960. Pp. xv, 135.

GAFFNEY, M. M. Concepts of financial maturity of timber and other assets. A. E. info. ser. no. 62. Raleigh: Dept. of Agric. Econ., North Carolina State College, 1960. Pp. vii, 105.

HAYTHORNE, G. V. *Labor in Canadian agriculture*. Cambridge: Harvard Univ. Press for Harvard Grad. School of Pub. Admin., 1960. Pp. 122.

HERFINDAHL, O. C. *Three studies in minerals economics*. Washington: Resources for the Future, 1961. Pp. iv, 63. \$1.

HUNT, K. E. AND CLARK, K. R. *The state of British agriculture, 1959-60*. Oxford: Oxford Univ. Agric. Econ. Research Inst., 1960. Pp. 150. 15s.

ISE, J. *Our national park policy—a critical history*. Baltimore: Johns Hopkins Press, for Resources for the Future, 1961. Pp. xiii, 701. \$10.

KOHL, R. L. *Marketing of agricultural products*. 2nd ed. New York: Macmillan, 1961. Pp. xiv, 424. \$7.50.

LOVEJOY, W. F. AND PIKL, I. J., ed. *Essays on petroleum conservation regulation*. Papers delivered at a seminar in industrial organization and public regulation. Dallas: Dept. of Econ., Southern Methodist Univ., 1960. Pp. 114. \$1.50.

MACDONALD, A. V. *Hacia una nueva política petrolera*. México: Promoción, 1959. Pp. 158. 15 pesos.

MORENO SÁNCHEZ, M. AND OTHERS. *Política ejidal*. México: Univ. Nacional Autónoma de México, Escuela Nacional de Ciencias Pol. y Soc., 1960. Pp. 186. 25 pesos.

MORGAN, W. *Survey of capital and credit in agricultural cooperative societies in Great Britain*. Oxford, Eng.: Blackwell, 1960. Pp. xii, 143. 15s.

O'CONNOR, W. *Stocks, wheat and Pharaohs*. New York: Wener Books Co., 1961. Pp. 211. \$5.; paper, \$3.50.

"The purpose here is to lay bare certain evidence suggesting the existence of a very subtle and curious pattern in the trends followed by commodity price movements in America."

OLSON, P. G. *Job mobility and migration in a high income rural community*. Research bull. no. 708. Lafayette: Purdue Univ. Agric. Experiment Station, 1960. Pp. 23.

ORIVE ALBA, A. *La política de irrigación en México: Historia, realizaciones resultados agrícolas, económicos, sociales. Perspectivas*. México: Fondo de Cultura Económica, 1960. Pp. 282. 60 pesos.

RODWIN, L. *Housing and economic progress—a study of the housing experiences of Boston's middle-income families*. Cambridge: Harvard Univ. Press & The Technology Press, 1961. Pp. x, 228. \$7.50.

ROSENBERG, N. *Economic planning in the British building industry 1945-49*. Philadelphia: Univ. of Pennsylvania Press, 1960. Pp. 159. \$5.

SAAB, G. *Motorisation de l'agriculture et développement agricole au Proche-Orient*. Paris: S.E.D.E.I.S.

- SANTA CRUZ, H. La función de la FAO en el bienestar rural. Rome: FAO, 1959. Pp. 188.
- SILVA HERZOG, J. El agrarismo mexicano y la reforma agraria—exposición y crítica. México: Fondo de Cultura Econ., 1959. Pp. 602. 40 pesos.
- TOSCHI, U. Geografia economica. (Economic geography.) Turin: UTET, 1959. Pp. 862.
- VON MONROY, J. A. Die ökonomischen Aspekte der Weltforstwirtschaft. Kieler Vorträge, N.F. 16. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1960. Pp. 22.
- YATES, P. L. Food, land and manpower in Western Europe. New York: St. Martin's Press; London: Macmillan, 1960. Pp. xiii, 294. \$7.
- Economía espacial jornadas. (Spatial economic meeting, December 17 and 18, 1959, La Plata University.) La Plata, Argentina: Univ. Nacional de La Plata, 1959. Pp. 92.
- Land ownership and resources. A course of lectures given at Cambridge in June 1958. Cambridge: Dept. of Estate Management, Univ. of Cambridge, 1960. Pp. 136. 15s.
- Large-scale ground-water development. New York: UN Water Resources Develop. Centre, 1960. Pp. vi, 84. \$1.25.
- Modern land policy: papers of the Land Economics Institute. Urbana: Univ. of Illinois Press, 1960. Pp. x, 449. \$8.50.
- Reports of study committees to President-elect John F. Kennedy. Washington: U.S. Dept. of Agriculture, 1961.
- Subdivision de la propiedad agrícola en una región de la zona central de Chile. Santiago, Chile: Inst. de Econ., Univ. de Chile, 1960. Pp. viii, 36.

Labor Economics

- BABEAU, A. Les conseils ouvriers en Pologne. Cahiers de Fondation Nat. des. Sci. Pol. no. 100. Paris: A. Colin, 1960. Pp. xiv, 309. NF 18.
- BERKOWITZ, M. Workmen's compensation—the New Jersey experience. New Brunswick: Rutgers Univ. Press, 1960. Pp. xiii, 298. \$6.
- BOWEN, W. G. Wage behavior in the postwar period—an empirical analysis. Princeton: Indus. Rel. Sec., Dept. of Econ., Princeton Univ., 1960. Pp. xiii, 137. \$3.
- CRESPI, D. Les salaires belges. Faits et théories. Paris: A. Colin, 1960. Pp. 255. NF 16.
- HERRERO, A. AND JORQUÍN, J. Muestreo de trabajo. Bilbao: Patronato de Univ. de Deusto, 1959. Pp. 148.
- KAUFMAN, J. J. AND GOLATZ, H. J. Chronic unemployment in Pennsylvania. University Park: Pennsylvania State Univ., Bur. of Bus. Research, 1960. Pp. 115.
- METZLER, W. H. AND SARGENT, F. O. Migratory farmworkers in the midcontinent streams. Washington: Supt. Docs., 1960. Pp. 62.
- MEYERS, F. European coal mining unions: structure and function. Monogr. no. 7. Los Angeles: Inst. of Indus. Rel., Univ. of Calif., 1961. Pp. 161. \$2.75.
- MITCHELL, O. State child-labor standards: a state-by-state summary of laws affecting the employment of minors under 18 years of age. Washington: Dept. of Lab., Bur. of Lab. Standards, 1960. Pp. 210.
- NEUFELD, M. F. Italy: school for awakening countries—the Italian labor movement in its political, social, and economic setting from 1800 to 1960. Ithaca: New York State School of Indus. and Lab. Relations, Cornell Univ., 1961. Pp. viii, 589. \$9.
- PETRO, S. The Kohler strike—union violence and administrative law. Chicago: Regnery, 1961. Pp. 118. \$3.
- REES, A. Real wages in manufacturing 1890-1914. Gen. ser. no. 70. Princeton: Princeton Univ. Press for Nat. Bur. of Econ. Research, 1961. Pp. xvi, 163.
- STRAND, K. T. Jurisdictional disputes in construction: the causes, the Joint Board and the NLRB. Econ. and bus. stud. bull. no. 33. Pullman: Bur. Econ. and Bus. Research, Washington State Univ., 1961. Pp. 197.
- WUNDERLICH, F. Farm labor in Germany 1810-1945—its historical development within the

- framework of agricultural and social policy. Princeton: Princeton Univ. Press, 1961. Pp. xv, 390. \$8.50.
- Arbeitszeit und Produktivität. Untersuchungsergebnisse wissenschaftlicher Forschungsinstitute. Vol. 1, Branchen- und betriebswirtschaftliche Untersuchungen durchgeführt vom Ifo-Institut für wirtschaftsforschung, München. Pt. B, Ergebnisse der betriebswirtschaftlichen Untersuchungen im ersten Halbjahr 1958. Brelm: Duncker & Humblot, 1960. DM 11.80.
- Collective bargaining in the basic steel industry—a study of the public interest and the role of government. Prepared by U.S. Dept. of Labor. Washington: Supt. Docs., 1961. Pp. ix, 317. \$1.25.
- The economic situation of Negroes in the United States. Washington: Bur. Labor Stat., 1960. Pp. 41.
- Employment and retirement of older workers: recommendations and report of the Governor's Commission on the Employment and Retirement Problems of Older Workers. Sacramento: Calif. State Printing Office, 1960. Pp. 144.
- Federal programs of assistance to labor surplus areas—a report. Compiled in: Office of Area Development, Business and Defense Services Administration, Dept. of Commerce, Interdepartmental Committee to Coordinate Federal Urban Area Assistance Programs. Washington: Supt. Docs., 1960. Pp. 43.
- Guide to state employment statistics: employment, hours and earnings. Washington: Supt. Docs., 1960. Pp. 71.
- Impact of automation: a collection of 20 articles about technological change, from the *Monthly Labor Review*. 87th Cong., 1st sess., U.S. Bur. of Lab. Stat. Washington: Supt. Docs., 1960. Pp. 114.
- Labour survey of North Africa. Stud. and reports n. s. no. 60. Geneva: Internat. Labour Office, 1960. Pp. xiii, 473. \$4.
- Migratory labor. Hearings before the Subcommittee on Migratory Labor, of the Senate Committee on Labor and Public Welfare. 86th Cong., 2nd sess., Homestead and Clewiston, Fla., Fresno and Sacramento, Calif., May 12-18 and July 8-11, 1960. Washington: Supt. Docs., 1961. Pp. 690.
- Selected translations on Soviet and satellite labor. Washington: Joint Pub. Research Svce., 1961. Pp. 189.
- Temporary unemployment compensation and aid to dependent children of unemployed parents. Hearings before the House Committee on Ways and Means, 87th Cong., 1st sess., Feb. 15-17, 1961. Washington: Supt. Docs., 1961. Pp. 423.
- Training and utilization of manpower resources. Hearings before the Subcommittee on Employment and Manpower of the Senate Committee on Labor and Public Welfare, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. 167.
- Summary of proceedings of Employment Security Conference of University Consultants, Adult Education Division, Syracuse University, Syracuse, N.Y. Oct. 20-22, 1960. Washington: Bur. Employment Security, U.S. Dept. of Labor, 1961. Pp. 23.

Population; Welfare Programs; Consumer Economics

- DE BIE, P. Budgets familiaux en Belgique 1957-1958—modes de vie dans trois milieux socio-professionnels. Louvain and Paris: Nauwelaerts, 1960. Pp. 434. Bfr. 350.
- EIZENGA, W. Demographic factors and savings. Contrib. to econ. analysis, 22. Amsterdam: North-Holland Pub. Co., 1961. Pp. x, 107. \$2.75.
- FRIEND, I. AND JONES, R. Proceedings of The Conference on Consumption and Saving. Vol. 1 and 2. Philadelphia: Wharton School of Finance and Commerce, Univ. of Pennsylvania, 1960. Pp. xxiv, 480.

These volumes contain papers, comments and rejoinders presented at the conference at the Wharton School, March 30 and 31, 1959.

- GEMMILL, P. F. *Britain's search for health: the first decade of the National Health Service*. Philadelphia: Univ. of Pennsylvania Press, 1960. Pp. 171. \$5.
- GINZBERG, B. AND ROGATZ, R. *Planning for better hospital care—report on the hospitals and health agencies of the Federation of Jewish Philanthropies of New York*. New York: King's Crown Press, 1961. Pp. xix, 131. \$5.
- HOPKINS, W. S., ed. *Aging in the state of Washington: a report by the Governor's Council on Aging*. Seattle: Univ. of Washington Press, 1961. Pp. viii, 391. \$6.
- LOYO, G. *La población de México—estado actual y tendencias 1960-1980*. México: Edit. Lagos, 1960. Pp. 104. 30 pesos.
- MORTARA, G. *Economia delle popolazioni*. (Economics of population.) Turin: UTET, 1960. Pp. 514.
- RICHARDSON, J. H. *Economic and financial aspects of social security—an international survey*. London: Allen & Unwin, 1960. Pp. 270. 30s.
- WILSON, W. H. *Consumer economic problems*. 6th ed. Cincinnati: South-Western Pub. Co., 1961. Pp. 682.
- Budgets des Français en 1956—dépenses et niveaux de vie*. Paris: Dunod, 1960. Pp. 234. NF 28.
- 1960 census of population: alphabetical index of occupations and industries*. Rev. ed. Washington: Bur. of the Census, 1960. Pp. 649.
- Health care for California—a report of the Governor's Committee on Medical Aid and Health*. Berkeley: State of Calif., Dept. Public Health. Pp. v, 102.
- Roma: popolazione e territorio dal 1860 al 1960—con la distribuzione territoriale dei risultati dei censimenti*. Rome: Ufficio de Stat. e Censimento, 1960. Pp. viii, 432. L. 5,000.

Related Disciplines

- ASHFORD, D. E. *Political change in Morocco*. Princeton Oriental stud. soc. sci., 3. Princeton: Princeton Univ. Press, 1961. Pp. xi, 432. \$8.50.
- CLEVELAND, H., ed. *The promise of world tensions*. New York: Macmillan, 1961. Pp. xvii, 157. \$3.50.
- FERRATON, H. *Syndicalisme ouvrier et social-démocratie en Norvège*. Paris: A. Colin, 1960. Pp. 206. NF 13.
- FLETCHER, R. H. *Free grass to fences—the Montana cattle range story*. New York: Univ. Pub. Inc., for Historical Society of Montana, 1960. Pp. xii, 233. \$12.
- HERRING, P., MOSELY, P. E., HITCH, C. J. AND OTHERS. *Research for public policy—Brookings dedication lectures*. Washington: Brookings Inst., 1961. Pp. ix, 126. \$1.50.
- HODGES, H. G. *Procurement—the modern science of purchasing*. New York: Harper, 1961. Pp. x, 405. \$7.50.
- KARTEL, H. S. *The decline of American pluralism*. Stanford: Stanford Univ. Press, 1961. Pp. x, 339. \$6.75.
- MARTIN, R. F. *The aging American veteran and the national economy*. Washington: Veterans Administration, 1960. Pp. vi, 64.
- PALOMBO, S. *Fisica economica*. (Economic physics.) Naples: Giannini, 1959. Pp. xxxi, 563.
- PORTER, C. O. AND ALEXANDER, R. J. *The struggle for democracy in Latin America*. New York: Macmillan, 1961. Pp. 215. \$4.50.
- SCHMECKEBIER, L. F. AND EASTIN, R. B. *Government publications and their use*. Rev. ed. Washington: Brookings Inst., 1961. Pp. xi, 476. \$6.
- SCHUBERT, G. *The public interest—a critique of the theory of a political concept*. Glencoe, Ill.: Free Press, 1960. Pp. x, 244. \$5.
- SENIOR, C. *Strangers—then neighbors: from pilgrims to Puerto Ricans*. New York: Freedom Books, 1961. Pp. vii, 86. 95 c.

SOLOMON, H., ed. Mathematical thinking in the measurement of behavior: small groups, utility, factor analysis. Glencoe, Ill.: Free Press, 1960. Pp. 314. \$7.50.

Three contributions of volume are: Pt. 1, The mathematical study of small groups, by J. S. Coleman; Pt. 2, Survey of Bernoullian utility theory, by E. W. Adams; Pt. 3, A survey of mathematical models in factor analysis, by H. Solomon.

VON BERTALANFFY, L. AND RAPOPORT, A., ed. General systems—yearbook of the Society for General Systems Research, vol. 5. Ann Arbor: Soc. Gen. Systems Research, 1960. Pp. xix, 235. \$7.50.

WHITNAH, D. R. A history of the United States Weather Bureau. Urbana: Univ. of Ill. Press, 1961. Pp. ix, 267. \$6.

The influences of social, scientific, and economic trends on government administration. The William A. Jump-L. Thomas McKillop Memorial Lectures in Public Administration 1960. Washington: Grad. School, U.S. Dept. of Agric., 1960. Pp. v, 74. \$1.50.

Social Science Research Council annual report 1959-1960. New York: Soc. Sci. Research Council, 1961. Pp. 102.

PERIODICALS

General Economics; Methodology

- BJÖRK, L. En sovjetekonom om stockholmsskolan. (A Soviet economist on "the Stockholm school.") *Ekon. Tids.*, Dec. 1960, pp. 233-49.
- COTTELY, E. Derecho económico. *El Trimestre Econ.*, Jan.-Mar. 1961, pp. 25-51.
- DI FENIZIO, F. L'economista come mediatore fra opposte premesse di valore. *Giorn. d. Econ.*, Sept.-Oct. 1960, pp. 583-602.
- HALTER, A. N. AND JACK, H. H. Toward a philosophy of science for agricultural economic research. *Jour. Farm Econ.*, Feb. 1961, pp. 83-95.
- HECHT, W. Die Problematik des "Kampfes" zwischen Staat und Wirtschaft. *Schmollers Jahrb.*, 1960, 80 (6), pp. 81-97.
- HICKS, J. R. Linear theory. *Econ. Jour.*, Dec. 1960, pp. 671-709.
- KNIGHT, F. H. Methodology in economics—part I. *So. Econ. Jour.*, Jan. 1961, pp. 185-93.
- MACHLUP, F. Are the social sciences really inferior? *So. Econ. Jour.*, Jan. 1961, pp. 173-84.
- . Operational concepts and mental constructs in model and theory formation. *Giorn. d. Econ.*, Sept.-Oct. 1960, pp. 553-82.
- MICKWITZ, G. Kritik av kritik i nationalekonomien. *Ekon. Samfundets Tids.*, 1960, 13 (4), pp. 226-38.
- NITAMO, O. E. AND PULLIAINEN, K. Taloudellinen malli. (With English summary.) *Kansantaloudellinen Aikakauskirja*, 1960, 4, pp. 392-419.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- ADELMAN, I. Business cycles—endogenous or stochastic? *Econ. Jour.*, Dec. 1960, pp. 783-96.
- ARROW, K. J. AND HURWITZ, L. Competitive stability under weak gross substitutability: the "Euclidean distance" approach. *Internat. Econ. Rev.*, Jan. 1960, pp. 38-49.
- AUTEN, J. H. Counter-speculation and the forward exchange market. *Jour. Pol. Econ.*, Feb. 1961, pp. 49-55.
- BEAR, D. V. T. The relationship of saving to the rate of interest, real income, and expected future prices. *Rev. Econ. Stat.*, Feb. 1961, pp. 27-36.
- BOMBACH, G. Kreislauftheorie und volkswirtschaftliche Gesamtrechnung (Fortsetzung). *Jahrb. f. Sozialwissensch.*, 1960, 11 (3), pp. 331-50.
- BOOT, J. C. G. AND DE WIT, G. M. Investment demand: an empirical contribution to the aggregation problem. *Internat. Econ. Rev.*, Jan. 1960, pp. 3-30.
- BROOKS, R. C., JR. Volume discounts as barriers to entry and access. *Jour. Pol. Econ.*, Feb. 1961, pp. 63-69.
- BROWN, V. H. Rate of return: some comments on its applicability in capital budgeting. *Accounting Rev.*, Jan. 1961, pp. 50-62.
- BUCHANAN, J. M. Positive economics, welfare economics, and political economy. *Jour. Law and Econ.*, Oct. 1959, pp. 124-38.
- CALABRESI, G. Some thoughts on risk distribution and the law of torts. *Yale Law Jour.*, March 1961, pp. 499-553.
- CAMERON, B. The anatomy of high employment. *Econ. Record*, Dec. 1960, pp. 542-49.

- CHEERUBINO, S. Concorrenza, evoluzione, sviluppo e programmazione quadratica in economia astratta. (With English summary.) *L'industria*, 1960, 4, pp. 447-71.
- COHEN, J. Sector investment and the availability of finance. *So. Econ. Jour.*, Jan. 1961, pp. 220-29.
- DAVIS, H. B. The unproductive notion of "productive labor." *Sci. and Soc.*, Winter 1961, pp. 20-25.
- DE JONG, A. M. Walter Bagehot 1826-1877. *De Economist*, Jan.-Feb. 1961, pp. 1-52.
- DEL VISOVO, M. La funzione del trasporto nell'economia dello spazio. *Riv. di Pol. Econ.*, Dec. 1960, pp. 2262-93.
- DENNISON, S. R. The British Restrictive Trade Practices Act. of 1956. *Jour. Law and Econ.*, Oct. 1959, pp. 64-83.
- DEVINE, C. T. Boundaries and potentials of reporting on profit-volume relationships. *N.A.A. Bull.*, Jan. 1961, sec. 1, pp. 5-14.
- DOW, L. A. Institutionalism and contemporary price theory. *Am. Jour. Econ. Soc.*, Jan. 1960, pp. 181-94.
- DUESENBERY, J. S., ECKSTEIN, O. AND FROMM, G. A simulation of the United States economy in recession. *Econometrica*, Oct. 1960, pp. 749-809.
- EARLEY, J. S. Business budgeting and the theory of the firm. *Jour. Indus. Econ.*, Nov. 1960, pp. 23-42.
- FERGUSON, C. E. Learning, expectations, and the cobweb model. *Zeitschr. f. Nationalökon.*, 1960, 20 (3-4), pp. 297-315.
- . The relationship of business size to stability: an empirical approach. *Jour. Indus. Econ.*, Nov. 1960, pp. 43-62.
- FORSYTH, F. G. The relationship between family size and family expenditure. *Jour. Royal Stat. Soc.*, 1960, 123 (4), pp. 367-97.
- HÄLLSTEN, B. Produktionsplanering med linjär programmering. (Production planning with linear programming.) *Ekon. Tids.*, Dec. 1960, 270-95.
- HEFLEBOWER, R. B. Stability in oligopoly. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 79-94.
- HETRICK, J. C. Mathematical models in capital budgeting. *Harvard Bus. Rev.*, Jan.-Feb. 1961, pp. 49-64.
- HISHIYAMA, I. The tableau économique of Quesnay. *Kyoto Univ. Econ. Rev.*, Apr. 1960, pp. 1-46.
- HOWE, M. Competition and the multiplication of products. *Yorkshire Bull. Econ. Soc. Research*, Nov. 1960, pp. 57-72.
- IWAND, T. Models of capital accumulation and economic instability. *Rev. Econ. Stat.*, Feb. 1961, pp. 51-58.
- LANG, O. Marxisme og den borgerlige økonomi. *Statsøkon. Tids.*, Dec. 1960, pp. 257-80.
- LE BRETON, P. P. A vital step toward the development of a theory of choice. *Univ. Wash. Bus. Rev.*, Feb. 1961, pp. 26-52.
- MACCHIORO, A. Divisione del lavoro e rivoluzione dell'industria in Marx. *Annali*, 1, 1960, pp. 291-321.
- MANDELBROT, B. The Pareto-Lévy law and the distribution of income. *Internat. Econ. Rev.*, May 1960, pp. 79-106.
- MARCHAL, J. Les propensions à consommer et à épargner et la comptabilité nationale française. *Rev. Econ.*, Jan. 1961, pp. 1-25.
- MERRETT, A. AND SYKES, A. Calculating the rate of return on capital projects. *Jour. Indus. Econ.*, Nov. 1960, pp. 98-115.
- MIETH, W. Personelle Einkommensverteilung und fallende Angebotskurven. *Jahrb. f. Sozialwissensch.*, 1960, 11 (3), pp. 270-97.
- MISHAN, E. J. Theories of consumer's behavior: a cynical view. *Economica*, Feb. 1961, pp. 1-11.

- MORISHIMA, M. AND THOMPSON, G. L. Balanced growth of firms in a competitive situation with external economies. *Internat. Econ. Rev.*, May 1960, pp. 129-42.
- MUNDLAK, Y. Empirical production function free of management bias. *Jour. Farm Econ.*, Feb. 1961, pp. 44-56.
- NAQVI, K. A. Schematic presentation of accumulation in Marx. *Indian Econ. Rev.*, Feb. 1960, pp. 13-22.
- NELSON, R. R. Uncertainty, prediction, and competitive equilibrium. *Quart. Jour. Econ.*, Feb. 1961, pp. 41-62.
- NEMCHINOV, V. Some theoretical questions of inter-branch and inter-regional balances of production and distribution of output. *Prob. Econ.*, Dec. 1960, pp. 8-16.
- NEVILLE, J. W. The stability of warranted growth. *Econ. Record*, Dec. 1960, pp. 479-90.
- NEWMAN, P. Approaches to stability analysis. *Economica*, Feb. 1961, pp. 12-29.
- NIKAIÐO, H. AND UZAWA, H. Stability and non-negativity in a Walrasian Tâtonnement process. *Internat. Econ. Rev.*, Jan. 1960, pp. 50-59.
- PALOMBA, G. Analisi del linguaggio e teoria del monopolio. *Rassegna Econ.*, Sept.-Dec. 1960, pp. 480-96.
- PANCHAMUKHI, V. R. A note on the "Theory of Games" in its application to problems in economic analysis. *Asian Econ. Rev.*, Nov. 1960, pp. 33-45.
- PÉREZ LEÑERO, J. Concepto y valoración del trabajo en la historia de las doctrinas económicas. *Moneda y Crédito*, Sept. 1960, pp. 39-54.
- PETIT, T. A. The influence of advertising on consumer choice. *Univ. Wash. Bus. Rev.*, Feb. 1961, pp. 17-25.
- PHELPS BROWN, E. H. AND BROWNE, M. H. Distribution and productivity under inflation, 1947-57. *Econ. Jour.*, Dec. 1960, pp. 725-56.
- PHILBROOK, C. E. Fitted money and the collective bargaining ideal. *So. Econ. Jour.*, Jan. 1961, pp. 209-19.
- PITCHFORD, J. D. Growth and the elasticity of factor substitution. *Econ. Record*, Dec. 1960, pp. 491-504.
- QAYUM, A. Theory of income generation and economic growth. *Econ. Jour.*, Dec. 1960, pp. 808-15.
- REES, A. Do unions cause inflation? *Jour. Law and Econ.*, Oct. 1959, pp. 84-94.
- ROSENBERG, N. Some institutional aspects of the Wealth of Nations. *Jour. Pol. Econ.*, Dec. 1960, pp. 557-70.
- SAMUELS, W. J. The physiocratic theory of property and state. *Quart. Jour. Econ.*, Feb. 1961, pp. 96-111.
- SAMUELSON, P. A. The St. Petersburg paradox as a divergent double limit. *Internat. Econ. Rev.*, Jan. 1960, pp. 31-37.
- SCARF, H. Some examples of global instability of the competitive equilibrium. *Internat. Econ. Rev.*, Sept. 1960, pp. 157-72.
- SHAYNIN, L. B. Proportions of exchange. *Econ. Jour.*, Dec. 1960, pp. 769-82.
- SHINKAI, Y. On equilibrium growth of capital and labor. *Internat. Econ. Rev.*, May 1960, pp. 107-11.
- SMITH, V. L. Problems in production-investment planning over time. *Internat. Econ. Rev.*, Sept. 1960, pp. 198-216.
- ST. SEIDENFUS, H. Werner Sombart und die reine Theorie. *Jahrb. f. Sozialwissensch.*, 1960, II (3), pp. 257-69.
- TAKATERA, S. Economics of depreciation financing. *Kyoto Univ. Econ. Rev.*, Apr. 1960, pp. 47-73.
- TIEBOUT, C. M. Community income multipliers: a population growth model. *Jour. Reg. Sci.* Spring 1960, pp. 75-84.
- VAN HERBRUGGEN, CH. Het tabakverbruik in België—Evolutie in het verleden en

- vooruitzichten tot 1975. *Cahiers Econ. de Bruxelles*, Oct. 1960, 8, pp. 527-54.
- VUARDEL, R. Le choix d'indifférence dans la pensée du professeur Hicks et sa critique. *Rev. Econ.*, Jan. 1961, pp. 114-44.
- WEINTRAUB, S. The Keynesian theory of inflation: the two faces of Janus? *Internat. Econ. Rev.*, May 1960, pp. 143-55.
- WURTELE, Z. S. Equilibrium in a uniformly expanding closed Leontief-type system. *Rev. Econ. Stud.*, Oct. 1960, pp. 23-28.
- The penetrative power of the price system. Three articles by E. E. Lampard, N. W. Taylor, J. H. Young, followed by a report of the discussion by J. Rubin. *Jour. Econ. Hist.*, Dec. 1960, pp. 617-58.

Economic History; Economic Development; National Economies

- ADLER, J. H. Some policy problems in economic development. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 111-19.
- ALLAIS, M. L'expansion économique des pays sous développés dans le cadre d'une démocratie libérale. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Nov. 1960, pp. 1017-36.
- ARRINGTON, L. J. L'economia americana nell'era atomica e dell'automazione. *Annali*, 1, 1960, pp. 35-48.
- BACHMANN, H. Die wirtschaftlichen Schwierigkeiten des Wiederaufbaus im Kongo. *Aussenwirtschaft*, Dec. 1960, pp. 307-20.
- BERNARD, J. Investissements et stratégie économique en U.R.S.S. *Rev. Econ.*, Jan. 1961, pp. 26-57.
- BRAND, W. De economische problematiek van de rijke landen. *De Economist*, Jan.-Feb. 1961, pp. 53-70.
- CASTELLINO, O. Il sistema economico jugoslavo. *Riv. di Pol. Econ.*, Jan. 1961, pp. 3-35.
- CHAND, M. On economic problems of underdeveloped countries with reference to India's Third Five Year Plan. *Indian Jour. Econ.*, July 1959, pp. 45-54.
- COCHRAN, T. C. Cultural factors in economic growth. *Jour. Econ. Hist.*, Dec. 1960, pp. 515-30.
- COLE, A. H. The relations of missionary activity to economic development. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 120-27.
- CORTÉS, J. B. The achievement motive in the Spanish economy between the 13th and 18th centuries. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 144-63.
- DE CARBON, L. B. Financement interne et financement externe des pays en voie de développement. *Rev. Sci. Fin.*, Jan. 1961, pp. 83-99.
- DE FALLEUR, R. Le Congo et l'activité économique de la Belgique. *Cahiers Econ. de Bruxelles*, Oct. 1960, 8, pp. 569-640.
- DENIS, H. L'évolution de la rentabilité moyenne des capitaux aux Etats-Unis depuis le début du siècle. *Rev. Econ.*, Jan. 1961, pp. 103-13.
- DURGIN, F. A., JR. The growth of inter-kolkhoz cooperation. *Soviet Stud.*, Oct. 1960, pp. 183-89.
- EAGLY, R. V. Sir James Steuart and the "aspiration effect." *Economica*, Feb. 1961, pp. 53-61.
- EASTERLIN, R. A. Israel's development: past accomplishments and future problems. *Quart. Jour. Econ.*, Feb. 1961, pp. 63-86.
- EPSTEIN, J. Inflación y estabilización en los países subdesarrollados. *El Trimestre Econ.*, Jan.-Mar. 1961, pp. 10-24.
- FITZT, S. La influencia de la industrialización sobre la dimensión y la estabilidad del ingreso nacional en los países del ABC (Argentina, Brasil y Chile). *Rev. de Econ. y Estad.*, 1959, 3 (1, 2, 3, 4), pp. 9-38.

- FURTADO, C. Formación de capital y desarrollo económico. *De Economía*, 1960, 13 (6), pp. 947-72.
- GARCÍA REYNOSO, P. Problemas de integración industrial latinoamericana. *Rev. de Econ. y Estad.*, 1959, 3 (1, 2, 3, 4), pp. 99-117.
- GERELLI, E. Politiche fiscali e commercio estero dei paesi sottosviluppati. II. *Giorn. d. Econ.*, Sept.-Oct. 1960, pp. 646-87.
- GONGGRIJP, G. Hulp aan de onderontwikkelde landen en het te kleine grondbezit der boeren. *De Economist*, Dec. 1960, pp. 817-42.
- HABERLER, G. The state and prospects of the U.S. economy. *Lloyds Bank Rev.*, Jan. 1961, pp. 15-34.
- HAJELA, P. D. Underdeveloped areas: an economic perspective. *Indian Jour. Econ.*, July 1959, pp. 15-30.
- HSIA, R. Growth and structural change of Chinese industry. *Contemp. China*, 1958-1959, 3, pp. 52-63.
- IOFFE, I. A. Major changes in the structure of modern industry. *Prob. Econ.*, Jan. 1961, pp. 44-51.
- KHAN, N. A. Resources for India's Third Five Year Plan. *Indian Jour. Econ.*, July 1959, pp. 65-72.
- KIISKINEN, A. Kasvu ja suhdannevaihtelu Suomessa vv. 1920-39 ja 1948-58. II. (With English summary.) *Liiketaloudellinen Aikakauskirja*, 1960, 3, pp. 247-75.
- KLEIN, S. Land problems and economic growth in India and China: another view. *Malayan Econ. Rev.*, Oct. 1960, pp. 66-80.
- KOJIMA, K. Capital accumulation and the course of industrialisation, with special reference to Japan. *Econ. Jour.*, Dec. 1960, pp. 757-68.
- KUMAR SEN, P. Use of the capital-output ratio in economic planning. *Indian Econ. Rev.*, Feb. 1960, pp. 23-31.
- KURIHARA, K. K. An endogenous model of cyclical growth. *Oxford Econ. Papers*, Oct. 1960, pp. 243-48.
- LAL, B. B. Some factual observations on industrial productivity in the underdeveloped economies. *Indian Jour. Econ.*, July 1959, pp. 101-8.
- LITTLE, I. M. D. The real cost of labor, and the choice between consumption and investment. *Quart. Jour. Econ.*, Feb. 1961, pp. 1-15.
- LOBATO BRIME, P. Comercio exterior y desarrollo económico en España. *De Economía*, Oct.-Dec. 1960, pp. 1161-86.
- MAHAJAN, V. S. Some reflections on the classical theory of growth with special reference to the problems of the underdeveloped countries. *Indian Jour. Econ.*, July 1959, pp. 31-36.
- MASSAKI, H. On capital-output ratios by industry of Japan, 1959. *Indian Econ. Rev.*, Feb. 1960, pp. 41-53.
- MATTHEWS, R. C. O. Liquidity preference and the multiplier. *Economica*, Feb. 1961, pp. 37-52.
- . The rate of interest in growth models. *Oxford Econ. Papers*, Oct. 1960, pp. 249-68.
- MEHTA, S. K. A comparative analysis of the industrial structure of the urban labor force of Burma and the United States. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 164-79.
- MILONE, F. Regional structure of Italian economy. III and IV. *Rev. Econ. Conditions in Italy*, Sept., Nov. 1960, pp. 483-506, 602-29.
- NICHOLSON, R. J. AND GUPTA, S. Output and productivity changes in British manufacturing industry, 1948-1954, a study from Census of Production data. *Royal Stat. Soc.*, 1960, 123 (4), pp. 427-59.
- NUTTER, G. W. The structure and growth of Soviet industry: a comparison with the United States. *Jour. Law and Econ.*, Oct. 1959, pp. 147-74.

- PALOMBA, G. La teoria dello sviluppo nel quadro dei recenti progressi della scienza economica. *Riv. di Pol. Econ.*, Dec. 1960, pp. 2215-28.
- PAUW, D. S. Some frontiers of empirical research in economic development. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 180-90.
- PERROUX, F. Per un rinnovamento necessario nell'analisi dell'innovazione e dello sviluppo. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Jan. 1961, pp. 1-21.
- PESEK, B. P. An estimate of national income of Czechoslovakia, 1946-53. *Internat. Econ. Rev.*, Jan. 1960, pp. 60-77.
- PHELPS BROWN, E. H. AND HOPKINS, S. V. Seven centuries of wages and prices: some earlier estimates. *Economica*, Feb. 1961, pp. 30-36.
- REDDAWAY, W. B. Some observations on the capital-output ratio. (With particular reference to India's Third Five Year Plan.) *Indian Econ. Rev.*, Feb. 1960, pp. 32-40.
- ROTTENBERG, S. Economic policy in the poor countries. *Jour. Law and Econ.*, Oct. 1959, pp. 139-46.
- SCHATZ, S. P. The influence of planning on development: the Nigerian experience. *Soc. Research*, Winter 1960, pp. 451-68.
- SCHWEITZER, A. Business power under the Nazi regime. *Zeitschr. f. Nationalökon.*, 1960, 20 (3-4), pp. 414-42.
- SETON, F. Soviet progress in Western perspective. *Soviet Stud.*, Oct. 1960, pp. 126-44.
- STONE, R. A comparison of the economic structure of regions based on the concept of distance. *Jour. Reg. Sci.*, Fall 1960, pp. 1-20.
- TALAMONA, M. Modelli di sviluppo ed esperienza storica sovietica: qualche riflessione. (With English summary.) *L'industria*, 1960, 4, pp. 472-95.
- TIAGUNENKO, V. Principal structural changes in the economies of underdeveloped countries. *Prob. Econ.*, Dec. 1960, pp. 52-64.
- TYRNI, I. Inflaation vaikutuksesta taloudelliseen kasvuun. (With English summary.) *Kansantaloudellinen Aikakauskirja*, 1960, 4, pp. 420-35.
- VILLARD, H. H. Some comments on "growth." *Am. Econ. Rev.*, Mar. 1961, pp. 123-25.
- YÜAN-LI, W. The economic challenge of Communist China. *Contemp. China*, 1958-1959, 3, pp. 41-51.
- Communication and economic development. Three articles by W. T. Easterbrook, M. McLuhan, D. E. Robinson. *Jour. Econ. Hist.*, Dec. 1960, pp. 559-87.
- Economy and economics of the East European countries—development and applicability. Two articles by M. Kaser and M. Dobb, introduction by J. Sannes. *Statskon. Tids.*, Dec. 1960, pp. 281-312.
- Impact and implications of foreign surplus disposal on underdeveloped economies. Articles by T. W. Schultz and S. R. Sen, with discussion by R. O. Olson and L. Witt. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1019-51.
- Review of the economy in 1960. *Surv. Curr. Bus.*, Feb. 1961, pp. 3-32.
- Spacial differentiation and economic growth. Four articles by H. W. Broude, W. Isard, K. H. Wolff, A. H. Clark, followed by a report of the discussion by G. S. Gibb. *Jour. Econ. Hist.*, Dec. 1960, pp. 588-616.
- Temporal aspects of economic change. Three articles by C. Goodrich, L. E. Davis, J. R. T. Hughes, S. Reiter, B. E. Supple, followed by a report of the discussion by J. H. Dales. *Jour. Econ. Hist.*, Dec. 1960, pp. 531-58.

Statistical Methods; Econometrics; Social Accounting

- BERRI, L. AND EFIMOV, A. Methods of preparing an inter-branch balance. *Prob. Econ.*, Dec. 1960, pp. 17-28.
- BROWN, T. M. Simultaneous least squares: a distribution free method of equation system structure estimation. *Internat. Econ. Rev.*, Sept. 1960, pp. 157-72.

- COHEN, K. J. AND CYERT, R. M. Computer models in dynamic economics. *Quart. Jour. Econ.*, Feb. 1961, pp. 112-27.
- DELLA PORTA, G. Programmazione nazionale e programmazione regionale. *Riv. di. Pol. Econ.*, Dec. 1960, pp. 2295-311.
- FULLER, W. A. AND MARTIN, J. E. The effects of autocorrelated errors on the statistical estimation of distributed lag models. *Jour. Farm Econ.*, Feb. 1961, pp. 71-82.
- GOODMAN, L. A. AND GRUNFELD, Y. Some nonparametric tests for comovements between time series. *Jour. Am. Stat. Assoc.*, Mar. 1961, pp. 11-26.
- IVENGAR, N. S. On a method of computing Engel elasticities from concentration curves. *Econometrica*, Oct. 1960, pp. 882-91.
- JORGENSEN, D. W. A dual stability theorem. *Econometrica*, Oct. 1960, pp. 892-99.
- KNESCHAUREK, F. Möglichkeiten und Grenzen der langfristigen Wirtschaftsprognose. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Dec. 1960, pp. 399-422.
- PANIZZON, G. Variazioni della distribuzione del reddito nel tempo. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Jan. 1961, pp. 22-39.
- RILEY, H. E. Some aspects of seasonality in the consumer price index. *Jour. Am. Stat. Assoc.*, Mar. 1961, pp. 27-35.
- UZAWA, H. Market mechanisms and mathematical programming. *Econometrica*, Oct. 1960, pp. 872-81.
- VENEKAMP, P. E. Nieuwe ontwikkelingen in het stelsel der regionale jaarrekeningen. *De Economist*, Nov. 1960, pp. 757-77.
- YARON, D. AND HEADY, E. O. Approximate and exact solution to non-linear programming problem with separable objective function. *Jour. Farm Econ.*, Feb. 1961, pp. 57-70.
- La comptabilité nationale de la Belgique 1948-1959. *Cahiers Econ. de Bruxelles*, Oct. 1960, pp. 501-26.
- A symposium on simultaneous equation estimation. Articles by C. F. Christ, C. Hildreth, T. C. Liu, L. R. Klein. *Econometrica*, Oct. 1960, pp. 835-71.

Economic Systems; Planning and Reform; Cooperation

- JOHANSEN, L. Liberalistisk økonomi og planøkonomi. *Statsøkon. Tids.* Sept. 1960, pp. 157-79.
- KLAT, P. J. Economics and manpower planning. *Middle East Econ. Papers*, 1960, pp. 55-64.
- KRONROD, I. A. Value as the basis of price under the conditions of a socialist economy. *Prob. Econ.*, Jan. 1961, pp. 21-36.
- WARD, B. Kantorovich on economic calculation. *Jour. Pol. Econ.*, Dec. 1960, pp. 545-56.
- Symposium on mathematical economics (in planning). Articles by P. Zhelezniak, A. Aganbegian and others. *Prob. Econ.*, Nov. 1960, pp. 3-52.

Business Fluctuations

- BOYD, J. A., JR. 1961: an industrial and stock market forecast for Canada and the United States. *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 7-12.
- MICONI, G. Recessions in Italy during the last fifteen years. *Rev. Econ. Conditions in Italy*, Nov. 1960, pp. 579-93.
- VAWTER, J. End of the post-war bull market? *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 17-22.

Money, Credit and Banking; Monetary Policy Consumer Finance; Mortgage Credit

- ARGY, F. Non-banking financial intermediaries and the process of credit creation. *Econ. Record*, Dec. 1960, pp. 530-41.

- BACH, G. L. AND HUIZENGA, C. J. The differential effects of tight money. *Am. Econ. Rev.*, Mar. 1961, pp. 52-80.
- BANFI, R. L'evoluzione del sistema bancario sovietico. I, II. (With English summary.) *Pol. d. Scambi*, Sept.-Oct., Nov.-Dec. 1960, pp. 23-44, 5-28.
- BORNSTEIN, M. The reform and revaluation of the ruble. *Am. Econ. Rev.*, Mar. 1961, pp. 117-22.
- BRONFENBRENNER, M. AND MAYER, T. Liquidity functions in the American economy. *Econometrica*, Oct. 1960, pp. 810-34.
- BRONFENBRENNER, M. Statistical tests of rival monetary rules. *Jour. Pol. Econ.*, Feb. 1961, pp. 1-14.
- CLAYTON, G. La banca central danesa y la política monetaria de 1945 a 1958. *Moneda y Crédito*, Sept. 1960, pp. 3-18.
- CROTEAU, J. T. Sources of consumer credit: instalment debt among institutional creditors. *Jour. Finance*, Dec. 1960, pp. 531-45.
- CULBERTSON, J. M. Friedman on the lag in effect of monetary policy. *Jour. Pol. Econ.*, Dec. 1960, pp. 617-21.
- DELL'AMORE, G. Risparmio e liquidità nel processo di sviluppo economico. (With English summary.) *Risparmio*, Nov. 1960, pp. 1903-26.
- DELLA PORTA, G. The Italian banking system. IV, V. *Rev. Econ. Conditions in Italy*, Sept., Nov. 1960, pp. 507-28, 630-46.
- DE MATTIA, R. Investimenti e risparmio in Germania dalla riforma monetaria alla convertibilità. *Riv. di Pol. Econ.*, Nov. 1960, pp. 1985-2046.
- FRANKS, O. Bank advances as an object of policy. *Lloyds Bank Rev.*, Jan. 1961, pp. 1-14.
- GASKIN, M. Liquidity and the monetary mechanism. *Oxford Econ. Papers*, Oct. 1960, pp. 274-93.
- GHOSH, S. Monetary control in an underdeveloped economy. *Econ. Internaz.*, Nov. 1960, pp. 603-13.
- GOEDHART, L. J. M. Enige opmerkingen over de economische betekenis van de koop op afbetaling. *De Economist*, Dec. 1960, pp. 843-68.
- GORDON, H. S. The Bank of Canada in a system of responsible government. *Can. Jour. Econ. Pol. Sci.*, Feb. 1961, pp. 1-22.
- HOGAN, W. P. Monetary policy and the financial intermediaries. *Econ. Record*, Dec. 1960, pp. 517-29.
- KAREKEN, J. H. Some observations on the Radcliffe Report. *Jour. Finance*, Dec. 1960, pp. 481-503.
- KENNEDY, C. Inflation and the bond rate. *Oxford Econ. Papers*, Oct. 1960, pp. 269-73.
- KINDAHL, J. K. Economic factors in specie resumption: the United States, 1865-79. *Jour. Pol. Econ.*, Feb. 1961, pp. 30-48.
- MIRABELLA, G. L'unification monétaire de la Communauté économique européenne. *Rev. Econ.*, Nov. 1960, pp. 913-36.
- NUSSBAUMER, A. Der Einfluss des Banksystems auf Geldmenge, Masseneinkommen und Zinsbildung. *Zeitschr. f. Nationalökon.*, 1960, 20 (3-4), pp. 316-413.
- PALMER, G. F. D. AND DICKMAN, A. B. The South African money market—some further developments. *So. Afr. Jour. Econ.*, Dec. 1960, pp. 354-69.
- PATINKIN, D. Financial intermediaries and the logical structure of monetary theory. (Review article.) *Am. Econ. Rev.*, Mar. 1961, pp. 95-116.
- RUDIN, M. Möglichkeiten und Grenzen der Diskontsatzpolitik. *Aussenwirtschaft*, Dec. 1960, pp. 338-54.
- SAYERS, R. S. Monetary thought and monetary policy in England. *Econ. Jour.*, Dec. 1960, pp. 710-24.
- SCHLESINGER, J. R. Monetary policy and its critics. *Jour. Pol. Econ.*, Dec. 1960, pp. 601-16.

- SCIMONE, G. La raccolta e l'investimento del piccolo risparmio in Gran Bretagna. (With English summary.) *Risparmio*, Dec. 1960, pp. 2115-42.
- WILLIAMS, D. Some aspects of monetary policy in England, 1952-1958. *Yorkshire Bull. Econ. Soc. Research*, Nov. 1960, pp. 96-110.
- Credit and money in 1960. *Fed. Res. Bull.*, Feb. 1961, pp. 129-36.
- Implementation of the 1959 act on reserve requirements. *Fed. Res. Bull.*, Dec. 1960, pp. 1326-31.
- A symposium on monetary theory. Articles by W. J. Baumol, F. H. Hahn and others. *Rev. Econ. Stud.*, Oct. 1960, pp. 29-56.

Public Finance; Fiscal Policy

- AMATO, A. Sulla incidenza al reddito di una imposta generale sulle vendite. *Riv. di Pol. Econ.*, Dec. 1960, pp. 2229-61.
- ARNDT, H. W. Control of inflation through fiscal policy: a reappraisal. *Econ. Record*, Dec. 1960, pp. 505-16.
- AVERY, H. G. Depreciation vs. inflation. *Accounting Rev.*, Jan. 1961, pp. 71-74.
- BAUMOL, W. J. Pitfalls in contracyclical policies: some tools and results. *Rev. Econ. Stat.*, Feb. 1961, pp. 21-26.
- BECKERT, J. A. Some facts of federal fiscal life and their importance to thinking Americans. *Accounting Rev.*, Jan. 1961, pp. 36-42.
- BIRD, R. M. A national tax on the unimproved value of land: the Australian experience, 1910-1952. *Nat. Tax. Jour.*, Dec. 1960, pp. 386-92.
- BROWN, E. R. How college textbooks treat land value taxation. *Am. Jour. Econ. Soc.*, Jan. 1961, pp. 148-68.
- BURNS, C. V. Current aspects of percentage depletion allowance. *N.A.A. Bull.*, Jan. 1961, sec. 1, pp. 25-32.
- CARLSEN, A. E. Public debt operations in British Columbia since 1952. *Can. Jour. Econ. Pol. Sci.*, Feb. 1961, pp. 64-71.
- COSCIANI, C. Vecchie e nuove impostazioni della finanza pubblica. *Giorn. d. Econ.*, July-Aug. 1960, pp. 443-61.
- DEHEM, R. Le rôle des finances publiques dans la croissance économique. *Cahiers Econ. de Bruxelles*, Oct. 1960, pp. 555-68.
- DIAMOND, A. H. Interest rates for government lending programs. *Nat. Tax Jour.*, Dec. 1960, pp. 320-28.
- EZENKWELE, A. The evolution of modern Nigerian finance: the problems and prospects. *Indian Jour. Econ.*, July 1959, pp. 37-44.
- FERRARA, W. L. Overhead costs and income measurement. *Accounting Rev.*, Jan. 1961, pp. 63-70.
- GERELLI, E. Politiche fiscali e commercio estero dei paesi sottosviluppati. *Giorn. d. Econ.*, July-Aug. 1960, pp. 462-503.
- GIORGETTI, A. La gestione della finanza pubblica nella evoluzione storica del bilancio statale. (With English summary.) *Risparmio*, Oct. 1960, pp. 1751-81.
- GOODE, R. Imputed rent of owner-occupied dwellings under the income tax. *Jour. Finance*, Dec. 1960, pp. 504-30.
- . New system of direct taxation in Ceylon. *Nat. Tax Jour.*, Dec. 1960, pp. 329-40.
- GROVES, H. M. AND RIEW, J. Statistical history of the property tax base in Wisconsin, 1916-1958. *Am. Jour. Econ. Soc.*, Jan. 1961, pp. 127-47.
- HICKS, U. K. The finance of the city state. *Malayan Econ. Rev.*, Oct. 1960, pp. 1-9.
- HORNGREN, C. T. AND SORTER, G. H. "Direct" costing for external reporting. *Accounting Rev.*, Jan. 1961, pp. 84-93.
- KINDAHL, J. K. Housing and the federal income tax. *Nat. Tax Jour.*, Dec. 1960, pp. 376-82.

- MATHAI, J. E. Some limitations of deficit spending. *Indian Jour. Econ.*, July 1959, pp. 55-64.
- MAXWELL, J. A. Recent developments in federal-state financial relations. *Nat. Tax Jour.*, Dec. 1960, pp. 310-19.
- MEHTA, J. K. The dichotomy of fiscal economy and the principle of taxation. (With French summary.) *Pub. Fin./Fin. Publiques*, 1960, 15 (2), pp. 101-12.
- MUNDELL, R. A. The public diet, corporate income taxes, and the rate of interest. *Jour. Pol. Econ.*, Dec. 1960, pp. 622-26.
- OORT, C. J. Een klassiek belastingtheorema in de maalstroom van de welvaartseconomie. *De Economist*, Nov. 1960, pp. 737-56.
- PAPKE, J. A. Michigan's value-added tax after seven years. *Nat. Tax Jour.*, Dec. 1960, pp. 350-63.
- PEACOCK, A. T. Les dépenses gouvernementales et la structure du marché. *Rev. Sci. Fin.*, Jan. 1961, pp. 32-44.
- ROUQUET LA GARRIGUE, V. La politique économique et financière en France de 1956 à 1958. (With English summary.) *Pub. Fin./Fin. Publiques*, 1960, 15 (2), pp. 130-62.
- SANDSTRÖM, C. O. The new Swedish scheme for taxation of dividends. *Bull. Internat. Fiscal Doc.*, Nov.-Dec. 1960, pp. 332-41.
- SCAILTEUR, C. L'harmonisation des législations relatives aux taxes sur les affaires dans le Marché commun. *Vie Econ. et Soc.*, Jan. 1961, pp. 27-38.
- SCHLESINGER, J. R. A suggested framework for monetary-fiscal analysis. *Rev. Econ. Stat.*, Feb. 1961, pp. 44-50.
- SCHMANDT, H. J. AND STEPHENS, G. R. Measuring municipal output. *Nat. Tax Jour.*, Dec. 1960, pp. 369-75.
- SOMERS, H. M. Reconsideration of the capital gains tax. *Nat. Tax Jour.*, Dec. 1960, pp. 289-309.
- TURVEY, R. Inflation as a tax in World War II. *Jour. Pol. Econ.*, Feb. 1961, pp. 70-73.
- WEIDENBAUM, M. L. The expenditure of governmental funds in the United States. (With French summary.) *Pub. Fin./Fin. Publiques*, 1960, 15 (2), pp. 115-27.
- . Government spending process and economic activity. *Am. Jour. Econ. Soc.*, Jan. 1961, pp. 169-80.
- WILLIAMSON, J. G. Public expenditure and revenue: an international comparison. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 43-56.
- The burden of the public debt: comments by W. Vickrey, T. Scitovsky, J. R. Elliott: reply by W. G. Bowen, R. G. Davis and D. H. Kopf. *Am. Econ. Rev.*, Mar. 1961, pp. 132-43.

International Economics

- ABRAHAM, J. P. Conjunctuurpolitiek en Europese economische integratie. (With English summary.) *Tijdschrift v. Econ.*, 1960, 5 (4), pp. 433-56.
- AHMAD, S. On the international supply of capital goods. *Indian Econ. Rev.*, Feb. 1960, pp. 1-12.
- BACHMANN, H. AND BOSSHARDT, A. Betrachtungen zur Aussenwirtschaftspolitik. *Aussenwirtschaft*, Dec. 1960, pp. 287-306.
- BAILEY, R. Finland between the EFTA and the eastern bloc. *Westminster Bank Rev.*, Feb. 1961, pp. 10-18.
- BALASSA, B. Towards a theory of economic integration. *Kyklos*, 1961, 14 (1), pp. 1-17.
- BINSWANGER, H. C. Vorschläge für den "Brückenschlag" EWG-EFTA—eine Übersicht. *Aussenwirtschaft*, Dec. 1960, pp. 321-37.
- BYÉ, M. Les problèmes posés par la Communauté européenne du charbon et de l'acier. *Rev. Econ.*, Nov. 1960, pp. 833-65.
- CHENERY, H. B. Comparative advantage and development policy. *Am. Econ. Rev.*, Mar. 1961, pp. 18-51.

- CLAIRMONT, F. F. Foreign investments and economic growth. *Indian Jour. Econ.*, July 1959, pp. 1-14.
- CORDEN, W. M. The geometric representation of policies to attain internal and external balance. *Rev. Econ. Stud.*, Oct. 1960, pp. 1-22.
- DE CRESPIGNY A. R. C. AND MCKINNELL, R. T. The nature and significance of economic boycott. *So. Afr. Jour. Econ.*, Dec. 1960, pp. 319-36.
- DEUTSCH, K. W. AND ECKSTEIN, A. National industrialization and the declining share of the international economic sector, 1890-1959. *World Pol.*, Jan. 1961, pp. 267-99.
- EKSTRÖM, J. World trade or regional trade. *Skandinav. Bank. Quart. Rev.*, Jan. 1961, pp. 8-14.
- ENKE, S. Gains and losses from trade in the short run. *Can. Jour. Econ. Pol. Sci.*, Feb. 1961, pp. 41-54.
- FABER, M. Southern Rhodesia alone? A look at the economic consequences. *So. Afr. Jour. Econ.*, Dec. 1960, pp. 283-302.
- FERRANTE, M. I lavori del Gatt e la Comunità economica europea. *Riv. di Pol. Econ.*, Dec. 1960, pp. 2312-32.
- FORTE, F. Dollaro, oro e bilancia dei pagamenti degli Stati Uniti. (With English summary.) *Riv. Internaz. Sci. Econ. e Com.*, Dec. 1960, pp. 1106-25.
- FOUNTAIN, J. 'Switch currencies' and other 'monetary mysteries.' *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 37-42.
- GEHRELS, F. The effect of price on Europe's exports to the United States. *Kyklos*, 1961, 14 (1), pp. 47-62.
- GORDON, L. Economic regionalism reconsidered. *World Pol.*, Jan. 1961, pp. 231-53.
- GORMAN, W. M. Tariffs and trade in a two-good world. *Internat. Econ. Rev.*, Sept. 1960, pp. 223-29.
- HABERLER, G. Comercio internacional y desarrollo económico. *De Economia*, Oct.-Dec. 1960, pp. 1087-1126.
- HENZLER, R. Leistungswettbewerb im Aussenhandel. *Liiketaloudellinen Aikakauskirja*, 1960, 3, pp. 231-46.
- HOPFMANN, E. Der volkswirtschaftliche Inhalt der Ausnahmeregelung für Exportkartelle im "Gesetz gegen Wettbewerbsbeschränkungen." *Jahrb. f. Sozialwissensch.*, 1960, 11 (3), pp. 298-330.
- KALISKI, S. F. Some recent estimates of 'the' elasticity of demand for British exports. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 23-42.
- KRAUSE, W. AND STEINDL, F. G. Gold and the dollar. *Iowa Bus. Digest*, Winter 1961, pp. 9-31.
- KRIZ, M. A. Gold in world monetary affairs today. *Pol. Sci. Quart.*, Dec. 1960, pp. 500-18.
- KURIHARA, K. K. Cost disinflation and export expansion. *Kyklos*, 1961, 14 (1), pp. 63-72.
- KUSHWAHA, G. S. India's foreign trade in the context of economic development. *Indian Jour. Econ.*, July 1959, pp. 109-18.
- LEDUC, G. La Communauté économique européenne et les pays sous-développés. *Rev. Econ.*, Nov. 1960, pp. 882-912.
- MAIZELS, A. The effects of industrialization on exports of primary-producing countries. *Kyklos*, 1961, 14 (1), pp. 18-46.
- MONTGOMERY, A. From a northern customs union to EFTA. *Scan. Econ. Hist. Rev.*, 1960, 8 (1), pp. 45-70.
- PAPI, G. U. La política de la comunidad económica europea. *Rev. de Econ. y Estad.*, 1959, 3 (1, 2, 3, 4), pp. 39-64.
- PERROUX, F. L'impresa motrice in una regione e la regione motrice. *Rassegna Econ.*, Sept.-Dec. 1960, pp. 415-59.
- PINDER, J. H. M. La Grande-Bretagne à l'égard du Marché commun. *Rev. Econ.*, Nov. 1960, pp. 955-71.

- REES, G. L. Country size and the terms of trade. *Economica*, Feb. 1961, pp. 62-65.
- RYMALOV, V. Economic competition of the two systems and the problem of aid to under-developed countries. *Prob. Econ.*, Dec. 1960, pp. 43-51.
- SPIEGELGLAS, S. Some aspects of state to state commodity flows in the United States. *Jour. Reg. Sci.*, Fall 1960, pp. 71-80.
- SFULBER, N. I risultati dell'embargo strategico al blocco cino-sovietico. (With English summary.) *Pol. d. Scambi*, Sept.-Oct. 1960, pp. 5-22.
- STEIN, J. L. A theory of interstate differences in the rates of growth of manufacturing employment in a free market area. *Internat. Econ. Rev.*, May 1960, pp. 112-28.
- SZCZEPANIK, E. F. Foreign trade of mainland China. *Contemp. China*, 1958-1959, 3, pp. 64-130.
- TATEMOTO, M. Sir Roy F. Harrod on internal and external balance. *Internat. Econ. Rev.*, Sept. 1960, pp. 217-22.
- THOMAS, B. International factor movements and unequal rates of growth. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 1-22.
- TRACY, M. Agriculture and a European economic union. *Westminster Bank Rev.*, Feb. 1961, pp. 19-31.
- VAN GRONSVELD, J. Enkele aspecten van de Gemeenschappelijke Markt. (With English summary.) *Tijdschrift v. Econ.*, 1960, 5 (4), pp. 375-402.
- VAN SLOBBE, W. J. Enige aspecten van de Gemeenschappelijke landbouwpolitiek van de E.E.G. (With English summary.) *Tijdschrift v. Econ.*, 1960, 5 (4), pp. 417-32.
- VERLOREN VAN THEMAAT, P. Concurrentieverhoudingen. (With English summary.) *Tijdschrift v. Econ.*, 1960, 5 (4), pp. 403-16.
- YAH, L. C. Export taxes on rubber in Malaya—a survey of post-war development. *Malayan Econ. Rev.*, Oct. 1960, pp. 46-58.
- Expansion of exports supports domestic business. *Surv. Curr. Bus.*, Dec. 1960, pp. 11-20.
- Impact and implications of foreign surplus disposal on developed economies and foreign competitors. Articles by E. Mortensen and M. Ezekiel, discussion by M. Myers and R. L. Kristjanson. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1052-83.
- A symposium: Vers un marché mondial, by F. Perroux and others. *Econ. Appliquée*, 1960, 13 (2), pp. 155-341.

Business Finance; Investment and Security Markets; Insurance

- BENISHAY, H. Variability in earnings-price ratios of corporate equities. *Am. Econ. Rev.*, Mar. 1961, pp. 81-94.
- BOEHMFALK, J. F. JR. The growth stock philosophy. *Fin. Analysts Jour.*, Nov.-Dec. 1960, pp. 113-24.
- CLARKSON, G. P. AND MELTZER, A. H. Portfolio selection: a heuristic approach. *Jour. Finance*, Dec. 1960, pp. 465-80.
- COWLES, A. A revision of previous conclusions regarding stock price behavior. *Econometrica*, Oct. 1960, pp. 909-15.
- HOCHMUTH, W. P. AND BOWES, A. S., JR. Investment companies: performance vs. charges. *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 43-50.
- MAYER, R. W. Analysis of flow of funds through capital market. *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 71-78.
- PACKER, S. B. Why buy bonds? *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 23-30.
- ROBSON, P. Index-linked bonds. *Rev. Econ. Stud.*, Oct. 1960, pp. 57-68.
- RUBNER, A. The abdication of the Israeli pound as a standard of measurement for medium and long-term contracts. *Rev. Econ. Stud.*, Oct. 1960, pp. 69-75.
- SERRANO SÁNCHEZ, J. M. I. El análisis de actividades en el campo financiero. *Rev. de Econ. Pol.*, Sept.-Dec. 1959, pp. 901-68.

- VACCÀ, S. Evoluzione nelle tecniche di emissione delle obbligazioni. (With English summary.) *Risparmio*, Nov. 1960, pp. 1927-92.
- WESTON, J. F. A not-so-new era in the stock market. *Fin. Analysts Jour.*, Nov.-Dec. 1960, pp. 57-66.
- Capital markets in 1960. *Fed. Res. Bull.*, Dec. 1960, pp. 1319-25.
- Small business financing: corporate manufacturers. *Fed. Res. Bull.*, Jan. 1961, pp. 8-22.

Business Organization; Managerial Economics; Marketing; Accounting

- BENNION, E. G. Econometrics for management. *Harvard Bus. Rev.*, Mar.-Apr. 1961, pp. 100-12.
- COHEN, S. B. Location research programming for voluntary food chains. *Econ. Geog.*, Jan. 1961, pp. 1-11.
- DEIN, R. C. A glance backward at research in accounting. *Accounting Rev.*, Jan. 1961, pp. 1-8.
- HEFLEBOWER, R. B. Observations on decentralization in large enterprises. *Jour. Indus. Econ.*, Nov. 1960, pp. 7-22.
- JAEDICKE, R. K. Improving B-E analysis by linear programming technique. *N.A.A. Bull.*, Mar. 1961, sec. 1, pp. 5-12.
- LU, J. Y. Optimum supermarket check-out facilities: an application of queuing theory. *Jour. Farm Econ.*, Feb. 1961, pp. 27-43.
- SHILLINGLAW, G. Problems in divisional profit measurement. *N.A.A. Bull.*, Mar. 1961, Sec. 1, pp. 33-43.

Industrial Organization; Government and Business; Industry Studies

- ADELMAN, M. A. Steel, administered prices and inflation. *Quart. Jour. Econ.*, Feb. 1961, pp. 16-40.
- BOK, D. C. Section 7 of the Clayton Act and the merging of law and economics. *Harvard Law Rev.*, Dec. 1960, pp. 226-355.
- BONNER, J. Administrative overheads in British manufacturing. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 57-78.
- BOS, H. C., AND KOYCK, L. M. The appraisal of road construction projects: a practical example. *Rev. Econ. Stat.*, Feb. 1961, pp. 13-20.
- DENNISON, S. R. Restrictive practices and the Act of 1956. *Lloyds Bank Rev.*, Jan. 1961, pp. 35-52.
- GEORGE, K. D. The economics of nuclear and conventional coal-fired stations in the United Kingdom. *Oxford Econ. Papers*, Oct. 1960, pp. 294-309.
- HAES, M. Industrie chimique, carbo ou pétro-chimie? *Annales de Sci. Écon. Appliquées*, Oct. 1960, pp. 469-505.
- HALE, G. E. AND HALE, R. D. Competition or control, IV: air carriers. *Univ. Penn. Law Rev.*, Jan. 1961, pp. 311-60.
- HALL, A. R. AND HILL, M. R. Housing demand in Australia, 1959-74. *Econ. Record*, Dec. 1960, pp. 550-67.
- HEBERTON, W. B. Electric utility regulation. *Fin. Analysts Jour.*, Jan.-Feb. 1961, pp. 61-70.
- KINTNER, E. W. Developments under the antimerger act and other aspects of the Federal Trade Commission's antitrust program. *Antitrust Bull.*, July-Aug. 1960, pp. 387-94.
- KRENGEL, R. Soviet, American and West German basic industries: a comparison. *Soviet Stud.*, Oct. 1960, pp. 113-25.
- LANSING, J. B., LIU, J., SUITS, D. B. An analysis of interurban air travel. *Quart. Jour. Econ.*, Feb. 1961, pp. 87-95.
- LOUGHLIN, J. T. Developments under the Robinson-Patman Act. *Antitrust Bull.*, July-Aug. 1960, pp. 419-35.

- MOORHEAD, T. B. Meeting "an equally low price of a competitor": a plea for judicial clarification of a judicial construction. *Antitrust Bull.*, July-Aug. 1960, pp. 439-43.
- NEUMEYER, F. Krisen und Umbruchszeiten in der Entwicklung des europäischen Patentwesens. *Wirtschaft und Recht*, 1960, 12 (4), pp. 252-66.
- . Patent und Beschränkung des Wettbewerbes. *Wirtschaft und Recht*, 1960, 12 (4), pp. 240-51.
- PARRIS, H. Adaptation to technical change in the paper-making industry: the paper-mill at Richmond, Yorkshire, 1823-1846. *Yorkshire Bull. Econ. Soc. Research*, Nov. 1960, pp. 84-89.
- PONSONBY, G. J. Earnings on railway capital. *Econ. Jour.*, Dec. 1960, pp. 797-807.
- PÜTZ, T. Die ordnungspolitische Problematik der Interessenverbände. *Jahrb. f. Sozialwissenschaft.*, 1960, 11 (3), pp. 245-56.
- QUANDT, R. E. Models of transportation and optimal network construction. *Jour. Reg. Sci.*, Spring 1960, pp. 27-46.
- REYCRAFT, G. D. Recent developments under the Sherman Act and Clayton Act and other aspects of the program of the Antitrust Division. *Antitrust Bull.*, July-Aug. 1960, pp. 395-418.
- VON BÖVENTER, E. Transportprobleme. Programmierungslösungen nach der Methode der reduzierten Matrizen im Vergleich zum Resultat des Marktmechanismus. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Dec. 1960, pp. 423-42.
- The economics of roads. Eight articles by D. L. Munby, M. E. Paul, D. J. Reynolds and others. *Bull. Oxford Univ. Inst. Stat.*, Nov. 1960, pp. 271-393.

Land Economics; Agricultural Economics; Economic Geography; Housing

- ALEKSEEV, M. A. Price fixing for some species of farm products. *Prob. Econ.*, Jan. 1961, pp. 11-14.
- BENNETT, D. C. The basic food crops of Java and Madura. *Econ. Geog.*, Jan. 1961, pp. 75-87.
- BRANDT, K. Guidelines for a constructive revision of agricultural policy in the coming decade. *Jour. Farm Econ.*, Feb. 1961, pp. 1-12.
- CRIST, R. E. Land for the fellahin: land tenure and land use in the Near East. XIII. *Am. Jour. Econ. Soc.*, Jan. 1961, pp. 115-26.
- DUNCAN, B. AND DUNCAN, O. D. The measurement of intra-city locational and residential patterns. *Jour. Reg. Sci.*, Fall 1960, pp. 37-54.
- DURÁN, M. A. Condiciones y perspectivas de la agricultura mexicana. *El Trimestre Econ.*, Jan.-Mar. 1961, pp. 52-79.
- FERRO, O. L'agricoltura nelle economie arretrate sovrappopolate e nel processo di sviluppo economico. (With English summary.) *Risparmio*, Oct. 1960, pp. 1713-50.
- GREDE, W. J. The changing farm scene and the agricultural equipment market. *Fin. Analysts Jour.*, Nov.-Dec. 1960, pp. 23-30.
- HEADY, E. O. AND PESEK, J. Expansion paths for some production functions. *Econometrica*, Oct. 1960, pp. 900-8.
- HERBERT, J. D. AND STEVENS, B. H. A model for the distribution of residential activity in urban areas. *Jour. Reg. Sci.*, Fall 1960, pp. 21-36.
- HIRSCH, E. L'énergie nucléaire et l'Europe. *Rev. Econ.*, Nov. 1960, pp. 866-81.
- KENNEDY, T. F. Land, food, and population in the Kingdom of Tonga. *Econ. Geog.*, Jan. 1961, pp. 61-71.
- KHUDOKORMOV, G. Differential land rent and problems of price formation in collective farm production. *Prob. Econ.*, Jan. 1961, pp. 15-20.
- KLEIN, S. Land problem and economic growth in India and China: another view. *Malayan Econ. Rev.*, Oct. 1960, pp. 66-80.

- KOROVIAKOVSKII, D. The new government purchase prices and the development of collective farm production. *Prob. Econ.*, Jan. 1961, pp. 3-10.
- LANZILLOTTI, R. F. The superior market power of food processing and agricultural supply firms—its relation to the farm problem. Discussion by S. K. Christensen, G. R. Slater and E. S. Clifton. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1228-64.
- LUBOVE, R. Homes and "a few well placed fruit trees": an object lesson in federal housing. *Soc. Research*, Winter 1960, pp. 469-86.
- MALGRAIN, Y. L'agriculture française devant le Marché commun européen. *Rev. Econ.*, Nov. 1960, pp. 937-54.
- PETHE, V. P. Congestion and over-crowding in cities and towns: a scrutiny of some popular beliefs. *Asian Econ. Rev.*, Nov. 1960, pp. 1-11.
- ROBERTSON, W. The tin experiment in commodity market stabilization. *Oxford Econ. Papers*, Oct. 1960, pp. 310-35.
- RUSSELL, J. C. The metropolitan city region of the Middle Ages. *Jour. Reg. Sci.*, Fall 1960, pp. 55-70.
- SLATER, D. W. Decentralization of urban peoples and manufacturing activity in Canada. *Can. Jour. Econ. Pol. Sci.*, Feb. 1961, pp. 72-84.
- TAYLOR, W. B. Short-term factors influencing New Zealand lamb prices in the United Kingdom. *Econ. Record*, Dec. 1960, pp. 568-80.
- TINBERGEN, J. Research on the geographical decentralization of industry in the Netherlands. *Riv. di Pol. Econ.*, Nov. 1960, pp. 1959-72.
- VACCHELLI, P. L. La produzione di energia elettrica nel lungo periodo e la cosiddetta legge dell'Ailleret. II. (With English summary.) *Econ. Internaz.*, Nov. 1960, pp. 614-52.
- WILLIAMSON, J. C., JR. AND TOUSSAINT, W. D. Parity and support prices for flue-cured tobacco. *Jour. Farm Econ.*, Feb. 1961, pp. 13-26.
- Measuring input changes in agriculture. Articles by G. T. Barton and D. D. Durost, Zvi Griliches, with discussion by R. H. Masucci, B. D. Gardner. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1398-1433.
- Potentialities and limitations of comprehensive supply control. Articles by G. E. Brandow, J. A. Baker, W. E. Hamilton, D. E. Hathaway. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1167-95.
- Problems of raising incomes in low-production areas of agriculture. Articles by C. E. Bishop and L. R. Martin with discussion by E. J. Nesius and R. Krishna. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1196-1227.
- Rural-urban competition for water. Articles by K. Gertel and N. Wollman, and S. C. Smith, with discussion by D. J. Allee and M. Gaffney. *Jour. Farm Econ.*, Proceedings, Dec. 1960, pp. 1332-66.

Labor Economics

- ADIB-SOLTANI, S. Money wage behavior in Iran from 1955-56 to 1957-58. *Middle East Econ. Papers*, 1960, pp. 1-12.
- ALEXANDER, K. Market practices and collective bargaining in automotive parts. *Jour. Pol. Econ.*, Feb. 1961, pp. 15-29.
- ARKIN, M. Strikes, boycotts—and the history of their impact on South Africa. *So. Afr. Jour. Econ.*, Dec. 1960, pp. 303-18.
- BARRY, C. A. White-collar employment: I—trends and structure. *Mo. Lab. Rev.*, Jan. 1961, pp. 11-18.
- BECKER, J. M. Twenty-five years of unemployment insurance: an experiment in competitive collectivism. *Pol. Sci. Quart.*, Dec. 1960, pp. 481-99.
- BLAKE, D. J. Swedish trade unions and the Social Democratic Party: the formative years. *Scan. Econ. Hist. Rev.*, 1960, 8 (1), pp. 19-44.
- COOPER, S. Work experience of the population in 1959. *Mo. Lab. Rev.*, Dec. 1960, pp. 1272-83.

- DEUTSCH, G. How the unemployed are counted. *Conf. Board Bus. Rec.*, Dec. 1960, pp. 21-30.
- FAXÉN, K.-O. The collective agreements system and wage determination. *Skandinav. Bank. Quart. Rev.*, Jan. 1961, pp. 1-13.
- GROOM, P. A review of American labor in 1960. *Mo. Lab. Rev.*, Jan. 1961, pp. 19-26.
- HENDERSON, J. P. Comparability of estimates of the industrial distribution of employment. *Rev. Econ. Stat.*, Feb. 1961, pp. 37-43.
- KEAT, P. G. Long-run changes in occupational wage structure, 1900-1956. *Jour. Pol. Econ.*, Dec. 1960, pp. 584-600.
- KESSEL, R. A. AND ALCHIAN, A. A. Real wages in the North during the Civil War: Mitchell's data reinterpreted. *Jour. Law and Econ.*, Oct. 1959, pp. 95-113.
- KILBRIDGE, M. D. Statistical indicators of the continuing effectiveness of wage incentive applications. *Jour. Indus. Econ.*, Nov. 1960, pp. 83-97.
- KORNHAUSER, R. Some social determinants and consequences of union membership. *Lab. Hist.*, Winter 1961, pp. 30-61.
- KÜNG, E. Gleicher Lohn für gleiche Leistung? *Wirtschaft und Recht*, 1960, 12 (4), pp. 229-39.
- MCCAFFREE, K. M. Union membership policies and labor productivity among asbestos workers. *Indus. Lab. Rel. Rev.*, Jan. 1961, pp. 227-34.
- O'CONNOR, J. Anticipated employment instability and labor market equilibrium. *Quart. Jour. Econ.*, Feb. 1961, pp. 128-32.
- RIMMER, D. The new industrial relations in Ghana. *Indus. Lab. Rel. Rev.*, Jan. 1961, pp. 206-26.
- SOBEL, I. Storia e sviluppo del movimento sindacale americano. *Annali*, 1, 1960, pp. 61-82.
- WELLINGTON, H. H. The constitution, the labor union, and "governmental action." *Yale Law Jour.*, Jan. 1961, pp. 345-75.

Population; Welfare Programs; Consumer Economics

- BLASI, M. Sulla comparazione del benessere di diverse nazioni. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Jan. 1961, pp. 47-54.
- CLARK, C. Do population and freedom grow together? *Fortune*, Dec. 1960, pp. 136-39.
- JACKSON, J. M. Wages, social income, and the family. *Man. School Econ. Soc. Stud.*, Jan. 1961, pp. 95-106.
- LÉVY, C. AND HENRY, L. Ducs et pairs sous l'Ancien Régime. Caractéristiques démographiques d'une caste. *Population*, Oct.-Dec. 1960, pp. 807-30.
- MA, R. AND SENG, Y. P. The economic characteristics of the population of the Federation of Malaya, 1957. *Malayan Econ. Rev.*, Oct. 1960, pp. 10-45.
- MORTARA, G. Nuovi metodi demografici? *Giorn. d. Econ.*, Sept.-Oct. 1960, pp. 625-45.
- OKUN, B. AND RICHARDSON, R. W. Regional income inequality and internal population migration. *Econ. Develop. and Cult. Change*, Jan. 1961, pp. 128-43.
- PAILLAT, P. Les différences de niveau de vie au sein de la classe ouvrière. *Population*, Oct.-Dec. 1960, pp. 769-88.
- SCHULTZ, T. W. Capital formation by education. *Jour. Pol. Econ.*, Dec. 1960, pp. 571-83.
- . Investment in human capital. *Am. Econ. Rev.*, Mar. 1961, pp. 1-17.
- SEKLANI, M. La fécondité dans les pays arabes: données numériques, attitudes et comportements. *Population*, Oct.-Dec. 1960, pp. 831-56.
- SPENGLER, J. J. The population problem: yesterday, today, tomorrow. *So. Econ. Jour.*, Jan. 1961, pp. 194-208.
- STROUFFER, S. A. Intervening opportunities and competing migrants. *Jour. Reg. Sci.*, Spring 1960, pp. 1-26.
- TOMASSON, R. F. Bias in estimates of the U.S. nonwhite population as indicated by trends in death rates. *Jour. Am. Stat. Assoc.*, Mar. 1961, pp. 44-51.

WEISBROD, B. A. AND FIESLER, R. J. Hospitalization, insurance and hospital utilization. *Am. Econ. Rev.*, Mar. 1961, pp. 126-31.

Population control. Fourteen articles by R. C. Cook, L. D. Stamp, H. B. van Loon and others. *Law and Contemp. Problems*, Summer 1960, pp. 379-629.

Quarterly survey of consumer buying intentions. *Fed. Res. Bull.*, Dec. 1960, pp. 1332-37.

Related Disciplines

DANIELS, R. V. The Chinese revolution in Russian perspective. *World Pol.*, Jan. 1961, pp. 210-30.

FRIEDMANN, G., DUMAZEDIER, J., LOWENTHAL, L. AND OTHERS. Sociological aspects of leisure. *Internat. Soc. Sci. Jour.*, 1960, 12 (4), pp. 509-608.

NICHOLLS, W. H. Higher education and agricultural economics: a critical appraisal. *Jour. Farm Econ., Proceedings*, Dec. 1960, pp. 969-90.

WITTFOGEL, K. A. Class structure and total power in oriental despotism. *Contemp. China*, 1958-1959, 3, pp. 1-10.

Measuring the success of the elementary course: comment by C. E. Rockwood and R. B. Harshbarger: reply by S. N. Whitney. *Am. Econ. Rev.*, Mar. 1961, pp. 144-49.

Nationalism and the revolution of expectations. Fifteen articles by K. H. Silvert, G. I. Blanksten and others. *Annals Am. Acad. Pol. and Soc. Sci.*, Mar. 1961, pp. 1-147.

NOTES

A nominating committee consisting of Arthur F. Burns, chairman, William C. Hood, James W. McKie, Arthur M. Okun, Daniel C. Vandermeulen and Janet L. Weston has submitted the following slate of nominees for 1962 officers of the American Economic Association:

President:

Edward S. Mason

President-Elect:

Gottfried Haberler

Vice President:

Joe S. Bain

Albert G. Hart

Richard A. Musgrave

Lawrence H. Seltzer

Executive Committee:

Vincent W. Bladen

Herbert Stein

Robert Triffin

W. Allen Wallis

Representative, Social Science Research Council:

Gardner Ackley

ECONOMISTS' ART EXHIBIT

At the next meeting of the American Economic Association at the Commodore Hotel in New York City, December 27-30, 1961 there will be an opportunity for artistic economists to exhibit their art works. The presentation of paintings, drawings, and sculpture is invited. Artists will be responsible for the transportation of their art works to and from the exhibition. The Association will not be responsible for loss or damage, though provision will be made to care for the exhibition in New York. Those proposing to exhibit should communicate with Professor William Baumol, Department of Economics, Princeton University, describing the number and character of proposed exhibits.

EDWARD S. MASON

Program Chairman

BROOKINGS RESEARCH PROFESSORSHIPS, 1962-63

The Brookings Institution invites nominations for the annual award of Research Professorships for professors of economics and business administration in selected four-year accredited liberal arts colleges. These awards, financed by a grant from the Ford Foundation, are for the purpose of encouraging research by faculty members of accredited liberal arts colleges offering substantial programs in economics and business. This program will not support research activities undertaken for fulfillment of the requirements of an advanced degree, or for the exploratory activities preliminary to the development of a research project.

Appointments are for one year. The appointees are expected to devote full time to research and may not engage in teaching or undertake other unusual outside commitments during the period of tenure. The research may be done on the recipient's own campus or

at any other suitable location. The awards are primarily for research projects that will be done in the United States.

The grants will be determined by the requirements of individual applicants. The stipend will be approximately equal to the normal salary of the appointee, unless a supplementary stipend is necessary to offset foregone summer income or to cover a cost-of-living differential when the research must be pursued in a more expensive location. Candidates who are eligible for sabbatical leave will be expected to use their sabbatical privileges during the period of the award.

The stipends provided by The Brookings Institution are partially exempt from federal income taxes. The Institution does not provide funds for fringe benefits, except annuity premiums on the candidate's regular salary in cases where they are, as a matter of policy, not continued by the college employing the candidate.

Consideration will be given to applications from full-time faculty members in institutions invited to submit nominations and to applications from full-time professors of economics and business in other accredited liberal arts colleges. Faculty members of universities and other institutions not classified as liberal arts colleges are not eligible for participation in this program.

Candidates from institutions invited to submit nominations will be sent application forms as soon as letters of nomination have been received. Other applicants may request forms directly from the Brookings Institution. All applications must be supported by a letter of nomination from an appropriate officer of the college.

NEW PUBLICATIONS

The first issue of a Japanese language journal *Konan Economic Papers* was published by the Economic Society of Konan University, Kobe, Japan, in June 1960. Two subsequent numbers have since appeared and six regular issues will be published each year.

The Department of Economics at Yale University has begun publication of *Yale Economic Essays* in which appear, in full or in extended summary, doctoral dissertations that have been accepted at Yale University. Contributions of faculty, students and former students of Yale University may also be published. Members of the editorial committee are Neil W. Chamberlain, chairman, Arthur M. Okun and Raymond P. Powell. The yearly subscription price for two issues is \$4.00. Correspondence should be addressed to the Editorial Board, 37 Hillhouse Ave., New Haven, Connecticut.

Announcements

The fourth Economics Institute for Foreign Students will be held at the University of Colorado June 30 to August 30, 1961. The Economics Institute is designed to refresh and, where necessary, to supplement foreign students' preliminary training in economics, English, and mathematics so that they may begin their graduate studies on a basis more nearly comparable to that of students whose undergraduate training has been obtained in the United States. The program is administered by the Institute of International Education, with the guidance of an advisory board nominated by the American Economic Association. Application forms and further information may be obtained from the Director of the institute, Professor Wyn F. Owen, University of Colorado, Boulder, Colorado.

The Solvay Institute of Sociology at the Free University of Brussels (Parc Leopold, Bruxelles 4, Belgium) announces the establishment of a Center for South-east Asia for the teaching of languages and the conduct of research with regard to the cultural, sociological, political and economic aspects of the countries of this region. The countries included are: India, Pakistan, Nepal, Ceylon, Burma, Thailand, Laos, Cambodia, Vietnam, Malay and Indonesia.

The Inter-University Committee for Economic Research on the South announces that the Ford Foundation has made available a grant of \$50,000 each year for five years to

support studies on the economic development of the South. A major portion of the funds will be allocated as research grants to mature research workers interested in undertaking projects designed to analyze and appraise significant economic developments in the South. Inquiries should be directed to Ernst W. Swanson, Department of Economics, North Carolina State College, Raleigh, N.C.

The Fund for Social Analysis is again offering in 1961 a number of grants-in-aid for studies of problems posed by Marxist theory and its application. Projects for books and essays in all fields of social science will be welcomed. Grants will ordinarily range from \$500 to \$3,000 and may be requested for an entire project, or for any part, or for assistance in research, editing or publication. Address inquiries to the Corresponding Secretary, The Fund for Social Analysis, Room 2800, 165 Broadway, New York 6, N.Y.

For inclusion in a special report to be published in *Labor History*, would anyone doing research in the field of American labor history please write to Professor Albert A. Blum, Labor and Industrial Relations Center, Michigan State University, East Lansing, Michigan, giving his name, organizational association, and tentative title of the study as well as a brief description of it.

Deaths

Edward D. Burdick, Wharton School, January 17, 1961.

David W. Bussell, November 17, 1960.

Thomas Nixon Carver, President of the American Economic Association in 1916 and professor emeritus Harvard University, March 7, 1961, in Santa Monica, California.

Thomas I. Crowell, Jr., July, 1960.

James A. Estey, Professor emeritus Purdue University, January 15, 1961.

Boris M. Joffe, Detroit, Michigan.

Edward J. Kelly, September 12, 1960.

Charles V. Kinter, February, 1960.

Frank R. E. Mauldon, professor emeritus University of Western Australia, February 14, 1961.

Lucy I. Morgan, University of Toronto, December 6, 1960.

George W. Sanford, Case Institute of Technology, December 15, 1960.

Daniel Scheinman, August 21, 1960.

Gordon Siefkin, Emory University, October 31, 1960.

C. Frank Smith, State University of Iowa, February 25, 1961.

Alfred W. Stern, May 4, 1960.

William R. Thom, August 28, 1960.

Lawrence L. Werboff, The Pennsylvania State University, January 30, 1961.

Retirements

Emily Clark Brown, Vassar College, June 1961.

Elmer D. Fagan, Stanford University, June 1961.

Franklin L. Ho, Columbia University.

Visiting Foreign Scholars

Peter G. Franck, Roberts College, Istanbul: visiting professor of economics, Columbia University, spring term 1962.

E. R. R. Green, University of Manchester: visiting associate professor of economics, University of Virginia 1961-62.

Owen P. F. Horwood, University of Natal, Durban, South Africa: visiting professor of economics, Duke University, fall semester 1961.

Leendert M. Koyck, The Netherlands School of Economics, Rotterdam: visiting professor of economics, University of Oregon, spring term, 1961.

Alan R. Prest, Cambridge University: visiting professor of economics, Columbia University, 1961-62.

Promotions

William W. Alberts: assistant professor of finance, Graduate School of Business, University of Chicago.

John D. Coupe: associate professor of business and economics, University of Maine.

John Ed. Elliott: associate professor of economics, University of Southern California.

Blaine E. Grimes: professor of economics, Ohio Wesleyan University.

Jules Joskow: associate professor of economics, The City College.

Peter B. Kenen: associate professor of economics, Columbia University.

Benjamin Klebaner: associate professor of economics, The City College.

Robert B. McNee: associate professor of economics, The City College.

Arnold H. Raphaelson: associate professor of business and economics, University of Maine.

Edwin P. Reubens: professor of economics, The City College.

Procter Thomson: professor of economics, Claremont Men's College.

W. Tate Whitman: Charles Howard Candler Professor of Economics, Emory University.

Administrative Appointments

Francis M. Boddy: associate dean of Graduate School, University of Minnesota.

Lester B. McAllister: chairman, department of economics, Beloit College.

H. Austin Peck: vice president for academic affairs, University of Maine.

Appointments

Louis de Alessi, University of California at Los Angeles: assistant professor, department of economics and business administration, Duke University.

John R. Allan: special lecturer in economics, University of Saskatchewan.

Henry G. Aubrey: visiting professor of economics, Columbia University, 1961-1962.

A. Gordon Ball: professor of economics, Iowa State University at Ames.

Merrill D. Bartlett: assistant professor of business and economics, University of Maine.

John Bowen: instructor in economics, Princeton University, 1961-62.

Norman Breckner, University of California at Los Angeles: research economist, cost analysis department, the RAND Corporation.

John A. Carlson: visiting assistant professor of economics, Cornell University, 1961-62.

Vincent P. Carosso: visiting associate professor of research, Graduate School of Business Administration, Harvard University.

John Chant: instructor, department of economics and business administration, Duke University.

Shun-Hsin Chou: visiting associate professor of economics, Columbia University, spring term 1961, and fall term 1961.

Eaton H. Conant: assistant professor of industrial relations, Graduate School of Business, University of Chicago.

David G. Davies, University of Cincinnati: associate professor, department of economics and business administration, Duke University.

Edwin R. Dean: lecturer in economics, Columbia University.

- Emile Despres, Williams College: professor of economics, Stanford University.
- Wayne Dobson: instructor in economics, Western Kentucky State College.
- Nicholas Dupoch: assistant professor of accounting, Graduate School of Business, University of Chicago.
- Alexander Eckstein, University of Rochester: professor of economics, University of Michigan.
- Stephen Enke: professor of economics, department of economics and business administration, Duke University.
- William R. Gardner: assistant professor of economics, Washington State University.
- Ralph A. Grosswiler: assistant professor, department of economics, Beloit College.
- John G. Gurley, University of Maryland and Brookings Institution: professor of economics, Stanford University.
- Harmon H. Haymes: assistant professor of economics, School of Commerce, Washington and Lee University.
- Donald W. Hill: assistant professor of marketing, Lehigh University.
- J. J. Jehring: from Profit Sharing Research Foundation to new Center for Productivity Motivation, University of Wisconsin.
- Louis J. Junker, Elmira College: assistant professor of economics, Western Michigan University, Kalamazoo.
- Richard Kao: research economist, the RAND Corporation.
- Wells H. Keddle: instructor in economics, Lehigh University.
- Donald King, University of North Carolina: instructor, department of economics and business administration, Duke University.
- Paul Koether: instructor in economics, Princeton University 1961-62.
- Walter Krause: research professor, State University of Iowa, spring semester 1960-61.
- Sherman R. Krupp, Florida State University: assistant professor of economics, Lehigh University.
- Marian Krzyzaniak, The Johns Hopkins University: assistant professor, department of economics, Wayne State University.
- William Leasure: instructor in economics, Princeton University, 1961-62.
- Robert E. Lipsey: member of research staff, National Bureau of Economic Research, effective December 19, 1960.
- H. Michael Mann: instructor in economics, Boston College.
- Rom J. Markin: assistant professor of business administration, Washington State University.
- James E. Martin: research associate, department of economics, Iowa State University (Ames).
- Francis M. McLaughlin: instructor in economics, Boston College.
- John E. Moes, University of Virginia: member of a U.S. Mission in Africa.
- Dan Padberg, University of California: assistant professor of market structure, department of agricultural economics, Ohio State University.
- Rudolf Penner: Program of Canadian Studies, University of Rochester.
- Richard Perlman: lecturer in economics, Columbia University.
- Kenneth J. Rea: assistant professor of economics, department of economics and political science, University of Saskatchewan.
- Robert V. Roosa: Under Secretary of the Treasury for Monetary Affairs, Washington, D.C.
- Kenneth Roose, Oberlin College: professor of economics and director of the division of business and economics, Michigan State University, Oakland campus, Rochester, Michigan.
- George Rosen: economist, Ford Foundation group with National Planning Council, Nepal, 1961-62.

Wolfgang Schoellkopf: lecturer in economics, Princeton University, 1961-62.

Zoltan Sebestyen: lecturer in economics, Columbia University.

Carl S. Shoup: Ford Research Professor, Columbia University.

Louis Simpson: instructor in economics, Princeton University, 1961-62.

Gordon G. Thiessen: instructor in political economy, department of economics and political science, University of Saskatchewan, 1961-62.

Norman B. Ture, Economist with the Joint Economic Committee: member of the research staff, and director of tax studies, National Bureau of Economic Research, effective March 13, 1961.

Hirofumi Uzawa, University of California, Berkeley: associate professor of economics, Stanford University.

Richard L. Wallace: instructor in economics, Florida State University.

James W. Wightman: instructor in economics, Trinity College, Hartford, Connecticut.

Jeffrey G. Williamson: assistant professor of economics, Vanderbilt University.

Leaves for Special Appointments and Assignments

Ray Billingsley, Texas Technological College: visiting professor of agricultural economics, Population Research Center, University of Chicago, assigned to the University of Rangoon, Burma.

Rudolph C. Blitz, Vanderbilt University: Vanderbilt overseas professor at the University of Chile for a full academic year beginning February 1, 1961.

Arthur I. Bloomfield, Wharton School, University of Pennsylvania: visiting professor of political economy, The Johns Hopkins University spring term 1961.

Lester V. Chandler, Princeton University: visiting professor of economics, University of Bombay, India, 1961-62.

Harry M. Douty, chief of the Division of Wages and Industrial Relations for the U.S. Bureau of Labor Statistics: visiting professor of labor and industrial relations second semester 1960-61, University of Illinois Institute of Labor and Industrial Relations.

Alexander Firfer, industrial development economist, UN TAO in Venezuela: two-month leave for plan of industrial promotion with ICA in Taiwan.

Morris E. Garnsey, University of Colorado: lecturer Salzburg Seminar in American Studies, February-March, 1961.

Clifford Hildreth, Michigan State University: visiting professor, departments of economics and agricultural economics, University of Minnesota, spring quarter 1961.

Morris A. Horowitz, Northeastern University: Ford Foundation program specialist in manpower for one year in Argentina.

George Katona, University of Michigan: visiting professor of industrial management at Massachusetts Institute of Technology, spring 1961.

John S. McCauley, U.S. Department of Labor: visiting professor, School of Industrial and Labor Relations, Cornell University.

Gerald M. Meier, Wesleyan University: Brookings Institution research professorship, 1961-62.

Paul A. Montavon, University of Notre Dame: lecturer at the Universidad de los Andes, Merida, Venezuela, 1960-61, on Smith-Mundt fellowship.

David D. Monieson, Wharton School of Accounts and Finance, University of Pennsylvania: visiting professor, Queens University, Kingston, Ontario, 1961-62.

James A. Papke, Wayne State University: special research assignment, Center for Economic Studies, Wayne State University, fall semester 1961.

William A. Wayt, Ohio State University: associate professor and department head of agricultural economics with the Oklahoma State University Contract Team, Imperial Ethiopian College, Dire Dawa, Ethiopia, for one year beginning July 1, 1961.

Rufus Wixon, Wharton School, University of Pennsylvania: professor at the Institute pour l'Etude des Méthodes de Direction de l'Enterprise (IMEDE), Lausanne, Switzerland, 1961-62.

Resignations

Paul A. Weinstein: Oklahoma State University.

Miscellaneous

Harold M. Groves, formerly professor of economics at the University of Wisconsin: elected chairman, Board of Directors, National Bureau of Economic Research, for 1961.

Frank H. Knight, professor emeritus, University of Chicago: awarded \$10,000 American Council of Learned Societies Prize for Distinguished Scholarship in the Humanities, in New York City, January 1961.

Grover A. J. Noetzel, formerly dean of the School of Business Administration, University of Miami, Coral Gables, Florida: giving up administrative duties summer 1961 to return as professor of economics, University of Miami.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Labor economics, industrial relations: Opportunity available for two men interested in research and analysis on industrial relations problems with national organization located in New York. Applicants must have analytical ability and corporate and/or teaching experience in the field. Some travel. Salary commensurate with experience and ability. Please submit complete résumé including salary. All replies will be held confidential. P239

Economist: Liberal arts college (Presbyterian) has opening for a man with Ph.D. in economics. Must be able to teach introductory and intermediate courses in theory—both micro and macro—and international economics. Duties will also include direction of research of students writing senior theses. Emphasis on success as teacher. May appoint at assistant or associate professor level. Starting salary from \$6,000 to \$8,000 for nine months. Substantial fringe benefits. Write William B. Boyd, Dean of the Faculty, Alma College, Alma, Michigan.

Marketing research, location analysis, land economics: For private research and consulting firm in formative stage in Southwest. Partnership or associate arrangement for qualified man with broad experience; doctorate preferred. Headquarters at Dallas, Texas. Send résumé giving full account of professional background and experience. All replies will remain strictly confidential. P240

Economics: Applications are invited for a lectureship or assistant lectureship in economics. The post involves undergraduate teaching in economic theory, money and banking. Basutoland offers special opportunities for original research into the economics of an emergent country. Appointment tenable from February 1, 1962. Salary scale for lecturer: £1,000 by £50 to £1,250 (efficiency bar) by £50 to £1,550; for assistant lecturer: £720 by £40 to £960. Status and initial salary according to qualifications and experience. Pension scheme. Family allowance of £100 p.a., plus £40 per child under the age of 18. Train and sea passages arranged for appointee, wife, and children. Baggage allowance. Application forms and further information obtainable from the Registrar, Pius XII College, Roma, Basutoland, Southern Africa, to be returned by June 15.

Economist: Our client, one of the country's largest and most progressive corporations, is both a basic supplier and a marketer of branded consumer paper and cellulose products. They seek an economist to head their Economic Section. Diverse areas of responsibility include research and analysis, forecasting, determining sales quotas and territories, etc. Salary is open. M.S. required. Ph.D. with industrial experience preferred. Replies will be acknowledged and held in confidence. Contact J. Semonche, Frederick Chusid and Company, Management Consultants, 205 West Wacker Drive, Chicago 6, Illinois.

THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Rendigs Fels
Arnold C. Harberger
Alfred E. Kahn
Joseph A. Pechman

Melvin W. Reder
Tibor Scitovsky
Robert Solow
Wolfgang F. Stolper

Volume LI

SEPTEMBER 1961

Number 4

ARTICLES

- A Theory of Economic Development *Gustav Ranis and J. C. H. Fei* 533
The Role of Agriculture in Economic Development *B. F. Johnston and J. W. Mellor* 566
Welfare Criteria for External Effects *E. J. Mishan* 594
Stochastic Reserve Losses and Expansion of Bank Credit *Daniel Orr and W. G. Mellon* 614
The Political Economy Club: A Neglected Episode in American Economic Thought *A. W. Coats* 624

COMMUNICATIONS

- The Golden Rule of Accumulation: A Fable for Growthmen *Edmund Phelps* 638
The Bethlehem-Youngstown Case and the Market-Share Criterion *L. S. Keyes* 643
A Theory of Optimum Currency Areas *R. A. Mundell* 657
Institutional Affiliation of the Contributors to Three Professional Journals *P. A. Yotopoulos* 665

BOOK REVIEWS

- ACKLEY, *Macroeconomic Theory*, by D. M. Wright 702
ASCHEIM, *Techniques of Monetary Control*, by L. S. Ritter 736
BAUMOL, *Economic Theory and Operations Analysis*, by W. C. Hood 687
BETTELHEIM, *Studies in the Theory of Planning*, by G. Rosen 731
BONBRIGHT, *Principles of Public Utility Rates*, by E. Schenker 769
BOULDING AND SPIVEY, *Linear Programming and the Theory of the Firm*, by H. Demsetz 685
BOWEN, *Wage Behavior in the Postwar World, An Empirical Analysis*, by R. J. Lampman 695

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1961

BUCEANAN, The Public Finances: An Introductory Textbook, by H. E. Brazer . . .	751
COPELAND, Trends in Government Financing, by B. U. Ratchford	748
CREAMER, DOBROVOLSKY AND BORENSTEIN, Capital in Manufacturing and Mining: Its Formation and Financing, by J. M. Mattila	763
DACEY, Money Under Review, by A. R. Sweezy	737
DISCHAMPS, Comportements économiques et distorsions fiscales, by J. F. Due	746
DOBB, An Essay on Economic Growth and Planning, by G. M. Meier	715
DUERR, Fundamentals of Forestry Economics, by W. J. Mead	771
DUNLOP, editor, Potentials of the American Economy—Selected Essays of Sumner H. Slichter, by C. L. Christenson	671
FERRARI, Politica monetaria—evoluzione e aspetti odierni, by F. M. Tamagna	739
GREENHUT, Full Employment, Inflation, and Common Stock, by R. W. Lindholm . .	781
HAINES, Money, Prices, and Policy, by H. S. Gordan	742
HALL, Fiscal Policy for Stable Growth, by F. M. Bator	749
HAMBERG, Principles of a Growing Economy, by J. K. Messing	679
HARTOG, Het economische Wereldbestel (The Economic World Order), by W. Gorter	760
HITCH AND MCKEAN, The Economics of Defense in the Nuclear Age, by H. J. Barnett	681
HOCHWALD, STRINER AND SONENBLUM, Local Impact of Foreign Trade, a Study in Methods of Local Economic Accounting, by D. D. Humphrey	757
HOLT, MODIGLIANI, MUTH AND SIMON, Planning Production, Inventories, and Work Force, by H. M. Wagner	697
HOSELITZ AND OTHERS, Theories of Economic Growth, by E. Marcus	713
KATKOFF, Soviet Economy, 1940-1965, by R. Gibson	730
KENEN, British Monetary Policy and the Balance of Payments 1951-57, by E. Zupnick	756
KIESEWETTER, Der Ostblock, Vol. II. Aussenhandel des östlichen Wirtschaftsblockes einschliesslich China, by H. Mendershausen	728
KNOFF AND STAUSS, editors, The Teaching of Elementary Economics, by R. L. Darcy	676
KRAUSE, Economic Development—the Underdeveloped World and the American Interest, by J. D. DeForest	717
KRÜGER, Der Ostblock, Vol. I. Die Produktion des östlichen Wirtschaftsblockes einschliesslich China nach dem Schwerpunktprogramm, by H. Mendershausen . .	728
LANGE, Essays on Economic Planning, by R. Varma	734
MAURICE, Les théories modernes de l'exploitation du travail, by G. Grosschmid . . .	777
MOORE AND FELDMAN, editors, Labor Commitment and Social Change in Developing Areas, by S. C. Sufrin	775
NELSON, editor, Economic Growth—Rationale, Problems, Cases, by C. E. Staley . .	722
NEUNER, The Natural Gas Industry: Monopoly and Competition in Field Markets, by I. M. Stelzer	765
NORTH, The Economic Growth of the United States, 1790-1860, by H. G. Shaffer . .	708
PERLOFF AND OTHERS, Regions, Resources, and Economic Growth, by M. E. Garnsey	724
POWELSON, National Income and Flow-of-Funds Analysis, by E. C. Budd	704
REES, Real Wages in Manufacturing 1890-1914, by S. Lebergott	773
RICHARDSON, Information and Investment: A Study in the Working of the Competi- tive Economy, by J. H. Power	761
ROBINSON, Exercises in Economic Analysis, by R. Clower	701
SCHELLING, The Strategy of Conflict, by R. L. Bishop	674
SEN, Choice of Techniques: An Aspect of the Theory of Planned Economic Develop- ment, by C. W. Howe	720
SOHMEN, Flexible Exchange Rates—Theory and Controversy, by S. Spiegelglas . . .	753
STRAFFA, Production of Commodities by Means of Commodities, by M. W. Reder . .	688
STOLPER, The Structure of the East German Economy, by A. S. Becker	726
TURVEY, Interest Rates and Asset Prices, by S. Weintraub	699
WATSON, Economic Policy: Business and Government, by B. A. Kemp	767
Collective Bargaining in the Basic Steel Industry, by V. D. Kennedy	776
Demographic and Economic Change in Developed Countries—A Conference of the Universities—National Bureau Committee for Economic Research, by S. H. Coontz	779

The Federal Reserve System, Purposes and Functions, 4th edition, by C. A. Matthews	741
Ocherki po istorii narodnogo khoziaistva SSSR (Essays in the Economic History of the USSR), by G. J. Novak	710
Public Finances: Needs, Sources and Utilization, by K. E. Poole	744
Trends in the American Economy in the Nineteenth Century. National Bureau of Economic Research. Studies in Income and Wealth, Volume XXIV, by C. Goodrich	706

OTHER DEPARTMENTS

Titles of New Books	783
Periodicals	802
Notes	817
Titles of Doctoral Dissertations	835

The American Economic Review

VOLUME LI

SEPTEMBER 1961

NUMBER FOUR

A THEORY OF ECONOMIC DEVELOPMENT

BY GUSTAV RANIS AND JOHN C. H. FEI*

This paper attempts to make a contribution towards the theory of growth by rigorously analyzing the transition process through which an underdeveloped economy hopes to move from a condition of stagnation to one of self-sustaining growth. Since the totality of economies bearing the "underdeveloped" label admittedly defies easy generalization, we shall be primarily concerned here with the labor-surplus, resource-poor variety in which the vast majority of the population is typically engaged in agriculture amidst widespread disguised unemployment and high rates of population growth. We hope to accomplish our task by drawing liberally on the stock of already accepted ideas and then proceeding to weave them into a general explanatory model of economic growth.

Our analysis begins with an economy's first departure from quasi-stagnation or the initiation of the so-called take-off process.¹ Rostow defines this as a period of two or three decades during which the economy transforms itself in such a way that economic growth becomes, subsequently, more or less automatic; its characteristics are a reduction of the rural proportion of the population, a doubling of savings rates and the first marked and continuous flowering of industry stimulated by the availability of surplus labor [11, pp. 25-32]. This well-known intuitive notion has been chosen as our point of departure. For our basic analytical tool-kit, however, we draw heavily on the work of Arthur Lewis.

In his celebrated articles Lewis [3] [4] presents a two-sector model and investigates the expansion of the capitalistic or industrial sector as it is nourished by supplies of cheap labor from the subsistence or agricultural

* The authors are assistant professor at Yale University and associate professor at Antioch College, respectively. This paper was initiated while both were associated with the Institute of Development Economics, Karachi, Pakistan. Comments by Bela Balassa and John M. Montias of Yale University are gratefully acknowledged.

¹ This is not to understate the importance of a prior preconditioning period (see [1] and [9]) when potentially expansionary institutional forces are being mobilized and render the system capable of a significantly positive response to a random stimulus.

sector.² Development consists of the re-allocation of surplus agricultural workers, whose contribution to output may have been zero or negligible, to industry where they become productive members of the labor force at a wage equal (or tied to) the institutional wage in agriculture. This process continues until the industrial labor supply curve begins to turn up.

Lewis, however, has failed to present a satisfactory analysis of the subsistence or agricultural sector. It seems clear that this sector must also grow if the mechanism he describes is not to grind to a premature halt. Pursuit of this notion of a required balance in growth then leads us to a logically consistent definition of the end of the take-off process.

Finally, the economy must be able to solve its Malthusian problem if the process of development along a balanced-growth path is to prove successful. Considerations of this nature have given rise to the so-called "critical minimum effort" theory [2], which deals with the size of the effort required to achieve a more-than-temporary departure from stagnation. We shall show, in the course of our analysis, that the concept of a critical minimum effort does not presuppose some absolute magnitude of effort but contains a built-in time dimension permitting the size of the effort to vary with the duration of the take-off process.

The contribution of this paper, then, is to construct a theory of economic growth of which the above ideas, rigorously formulated, constitute component parts. In Section I we present the basic structural assumptions of our model with emphasis on analysis of the role of the "neglected" agricultural sector. Section II generalizes the previously "static" analysis by admitting the possibility of a change of productivity in the agricultural sector. In Section III we introduce changes in industrial productivity and the notion of a "balanced growth criterion" by means of which the termination of the take-off process is formally defined. Section IV proceeds with a precise mathematical formulation of our theory which enables us to make certain quantitative conditional predictions as a first test of its empirical relevancy. Finally, in Section V, we integrate population growth as well as some other real-world complexities into our model and investigate the notion of the critical minimum effort in relation to the length of the take-off process.

I. The Basic Assumptions

Our formal explanatory model is presented with the help of Diagram 1. Diagram 1.1 depicts the industrial sector and Diagrams 1.2 and 1.3

² We wish to underscore the absence of any necessary one-to-one relationship between the subsistence sector and agriculture, or between the capitalistic sector and industry in most less-developed economies. The existence of substantial islands of commercialized production in the primary sector and of sizable subsistence enclaves in the small-scale and service industries does not, however, bar Lewis, or us, from using this short-hand terminology.

INDUSTRIAL SECTOR



DIAGRAM 1

the agricultural sector. The first is the familiar Lewis diagram measuring industrial labor on the horizontal axis OW and its marginal physical productivity (MPP) on the vertical axis OP . The demand curve for labor (i.e., the MPP curve dif), together with the supply curve of labor ($S\#S'$), determines the employment of the industrial labor force (Sl). Since the marginal physical productivity curve depends on the size of the capital stock cooperating with the labor force, an increase in the capital stock leads to a shift of the MPP curve to the right, e.g. to $d't'f'$. Lewis' "unlimited" supply curve of labor is defined by the horizontal portion of the supply curve, i.e. Sl . When this supply curve turns up, unlimitedness comes to an end. Our first problem is to investigate the conditions of this turning point. This leads us to focus attention on the agricultural sector.

In Diagram 1.3 let the agricultural labor force be measured on the horizontal axis OA (reading from right to left), and let agricultural output be measured on the vertical axis OB (downward from O). The curve $ORCX$ describes the total physical productivity of labor (TPP) in the agricultural sector. This curve is assumed to have a concave portion ORC showing a gradually diminishing marginal productivity of agricultural labor and a horizontal portion XC where marginal product vanishes. The portion of any labor force in excess of OD may be considered redundant in that its withdrawal from agriculture would not affect agricultural output.

At the initial (or break-out) point let the entire labor force OA be committed to agriculture, producing a total agricultural output of AX . Let us assume that the agricultural output AX is totally consumed by the agricultural labor force OA . Then the real wage is equal to AX/OA or the slope of OX . The persistence of this wage level is sustained by institutional or nonmarket forces since under competitive assumptions the real wage would fall to zero, at equality with MPP. We shall call this the institutional wage.

Let point R on the total output curve be the point at which the MPP equals the institutional wage, i.e. the dotted tangential line at R is parallel to OX . We can then define AP as the disguisedly unemployed agricultural labor force since, beyond P , MPP is less than the institutional wage.³

Note that Diagrams 1.1, 1.2, and 1.3 are "lined up." Any point on the horizontal axis of Diagrams 1.1 to 1.3 represents a particular way in which the total population or labor force OA is distributed between the two sectors; for example, at point P (Diagrams 1.2 and 1.3) the

³ Redundancy is a technological phenomenon, i.e., determined by the production function. Disguised unemployment, on the other hand, depends upon the production function, the institutional wage, and the size of the agricultural population. In other words, it is an economic concept.

agricultural labor force is OP and the (already allocated) industrial labor force is AP . If, at the break-out point, the entire population, OA , is engaged in the agricultural sector, the allocation process during take-off can be represented by a series of points, A, G, D, I, P , etc., on OA , gradually moving towards O .⁴

The important concepts of disguised unemployment, redundant labor force and institutional wage can be more clearly depicted with the aid of Diagram 1.2, in which agricultural output per worker is measured on the vertical axis AN . Let $ADUV$ be the marginal physical productivity (MPP) curve of labor in the agricultural sector. Let the vertical distance AS equal the institutional wage (shown also as PU , equal to MPP of agricultural labor at U , lined up with P and R in Diagram 1.3). Three phases in the re-allocation process may now be distinguished: (1) Phase 1 is the range for which $MPP=0$, i.e., the total productivity curve in Diagram 1.3 is horizontal. This phase marks off the redundant labor force, AD . (2) Phase 2 is the range for which a positive MPP is less than the institutional wage. Phases 1 and 2 together mark off the existence of the disguisedly unemployed labor force, AP . (3) Phase 3 is the range for which MPP is greater than the institutional wage rate assumed to prevail at the break-out point.

We assume that the institutional wage AS prevails during phases 1 and 2 and a wage rate equal to MPP prevails in phase 3. Only when the disguisedly unemployed have been absorbed, i.e. in phase 3, does the marginal contribution of labor to output become as great as or greater than the institutional real wage. As a result, it is then to the advantage of the landlord to bid actively for labor; the agricultural sector can be said to have become commercialized as the institutional wage is abandoned and competitive market forces yield the commonly accepted equilibrium conditions. Under these assumptions the agricultural real wage in terms of agricultural goods is defined by the curve SUV in Diagram 1.2, consisting of a horizontal portion SU and a rising portion, UV . This curve may be called the supply-price curve of agricultural labor. It indicates for each level of real wage the amount of labor that may be released from the agricultural sector.

The transition into phase 3 constitutes a major landmark in the developmental process. With the completion of the transfer of the disguisedly unemployed, there will occur a switch, forced by circumstance, in employer behavior, i.e. the advent of a fully commercialized agricultural sector. This landmark may be defined as the end of the take-off process. We know no other way to establish a nonarbitrary criterion for an economy reaching the threshold of so-called self-sustaining growth.⁵

⁴ The present assumption of an unchanging population will later be relaxed.

⁵ Whether or not growth can ever really be "self-sustaining," in Rostow's phrase, is basi-

Returning now to Diagram 1.3, we see that, as agricultural workers are withdrawn, a surplus of agricultural goods begins to appear. That portion of total agricultural output in excess of the consumption requirements of the agricultural labor force at the institutional wage is defined as the total agricultural surplus (TAS). The amount of TAS can be seen to be a function of the amount of labor reallocated at each stage. For example, if agricultural workers to the extent of AG are withdrawn in phase 1 and re-allocated, JG is required to feed the remaining agricultural workers and a TAS of size JF results. The TAS at each point of allocation in phases 1 and 2 is represented by the vertical distance between the straight line OX and the total physical productivity curve $ORCX$. (For phase 3, due to the rise of the wage rate, TAS is somewhat less than this vertical distance and equals the vertical distance between the curve OQ and the total productivity curve).

TAS may be viewed as agricultural resources released to the market through the re-allocation of agricultural workers. Such resources can be siphoned off by means of the investment activities of the landlord class and/or government tax policy and can be utilized in support of the new industrial arrivals.⁶ The average agricultural surplus, or AAS, may now be defined as the total agricultural surplus available per head of allocated industrial workers.

The AAS curve is represented by curve $SYZO$ in Diagram 1.2. In phase 1 as TAS increases linearly with the allocation of the redundant labor force from A to D we can picture each allocated worker as carrying his own subsistence bundle along with him. The AAS curve for phase 1 thus coincides with the institutional wage curve SY . In phase 2, however since the MPP in agriculture of the now allocated workers was positive there will not be sufficient agricultural output to feed all the new industrial arrivals at the institutional wage level. Thus, while TAS is still rising, AAS begins to fall.⁷ It can, moreover, readily be seen that

cally not a problem amenable to the tools of traditional economic analysis. The role of saving rates and per capita income levels in setting it in motion remains undefined. All we are saying here is that, after the turning point, the real wage in agriculture is determined by impersonal competitive market forces, a qualitative transformation which constitutes a necessary (if not sufficient) condition for growth to become automatic and routinized. It is this point which Lewis [4, p. 26] seems to have in mind when he speaks of "two different stages of economic development with two different sets of results" and describes the second stage as a situation in which "all the factors of production are scarce [and] . . . wages are no longer constant as accumulation proceeds."

⁶ While it could easily be accommodated by the model, we neglect resource transfer costs as well as the possibility that it may be impossible to induce those left behind in agriculture to release the entire surplus.

⁷ The following analogy with individual-firm analysis may be drawn to show more clearly the relationship between the marginal, total and average concepts involved. We may think of the total agricultural output curve ($ORCX$) and the total agricultural consumption curve (OX) in Diagram 1.3 as analogous to the total revenue curve and the total cost curve, respectively. Then the gap between these curves is the total profit curve which is equivalent to our

during phase 3 AAS declines even more rapidly (and TAS also declines) as the now commercialized wage in agriculture becomes operative.

We may now consider the derivation of the Lewis turning point in the agricultural sector. Lewis himself [4, pp. 19–26] explains the turning point rather loosely as occurring when one of the following events puts an end to the horizontal supply curve of labor: (a) the worsening of the terms of trade for the industrial sector, and (b) the exhaustion of the labor surplus in the agricultural sector. But in our model any such explanation must take into account the basic determination of the entire industrial labor supply curve by the conditions postulated for the non-industrial sector.

The “worsening of the terms of trade” for the industrial sector occurs as the result of a relative shortage of agricultural commodities seeking exchange for industrial goods in the market. In our model, it will be recalled, this surplus is measured by total agricultural surplus (TAS) and, on a per-industrial-worker basis, average agricultural surplus (AAS). There is a tendency, then, for the industrial supply curve to turn up as phase 2 is entered because this is the time when there begins to appear a shortage of agricultural goods measured in AAS—causing a deterioration of the terms of trade of the industrial sector and a rise in the industrial real wage measured in terms of industrial goods. We thus see that the disappearance of the redundant labor force in the agricultural sector is a cause of the Lewis turning point.

The “exhaustion of the labor surplus” must be interpreted primarily as a market phenomenon rather than as a physical shortage of manpower; it is indicated by an increase in the real wage at the source of supply. If we assume that the real wage of the industrial worker is equal to the agricultural real wage,⁸ then there is a tendency for the industrial supply curve of labor (SW/S' in Diagram 1.1) to turn upward when phase 3 is entered. With the disappearance of the disguisedly unemployed labor force and the commercialization of the agricultural sector, the agricultural real wage begins to rise (see Diagram 1.2). This leads to an increase in the industrial real wage level if the industrial employer

TAS curve. The total profit curve reaches a maximum when marginal cost equals marginal revenue. This occurs at point U in Diagram 1.2—because SU is the marginal cost curve and $ADUV$ is the marginal revenue curve. The AAS curve in Diagram 1.2 is equivalent to an “average profit curve.”

⁸ “Governed by” may be a more realistic description. Lewis [3, p. 150] points out that urbanization, transfer costs, etc. may require an industrial real wage at a constant (he believes approximately 30 per cent) margin or “hill” above the institutional wage in agriculture; while, for simplicity of exposition, our model initially maintains strict equality between the two wage rates, this assumption is later relaxed (Section V). In his second article [4], Lewis also refers to certain “exogenous factors,” including unionization and presumably other changes in the institutional milieu. Such a dynamically growing “hill” could also be accommodated by the model but has not been considered in this first approximation.

is to compete successfully with the landlord for the use of the, by now "limited," supply of labor.

Putting the two factors (a and b) together, we can say that as labor is re-allocated from the agricultural to the industrial sector, the industrial supply curve turns up (i.e. the Lewis turning point occurs), in the first instance (at t), due to a shortage of agricultural goods traceable to the disappearance of the redundant agricultural labor force; and that this upward trend in the industrial real wage is later accentuated (at X') by the upward movement of the agricultural real wage traceable to the complete disappearance of the disguisedly unemployed labor force and the commercialization of the agricultural sector.

To facilitate our later analysis, let us refer to the boundary between phases 1 and 2 (i.e., point Y in Diagram 1.2) as the "shortage point" signifying the beginning of shortages of agricultural goods as indicated by the fact that AAS falls below the minimum wage; let us also refer to the boundary between phases 2 and 3 as the "commercialization point" signifying the beginning of equality between marginal productivity and the real wage in agriculture. The Lewis turning point thus coincides with the shortage point and the upward movement of the industrial real wage is accentuated at the commercialization point.⁹

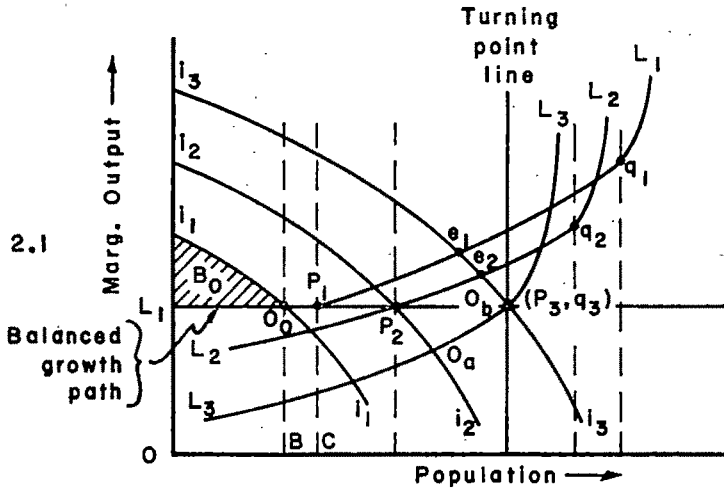
There are two factors which may lead to a postponement of the Lewis turning point: (1) increases in agricultural productivity, and (2) population growth. The fact that these two factors operate very differently—one, generally viewed as a blessing, by raising surplus agricultural output, the other, almost invariably considered a curse, by augmenting the supply of redundant labor, is intuitively obvious. We shall first examine the significance of an increase of agricultural productivity. The extension of our analysis to accommodate population growth will be undertaken later.

II. *Changes in Agricultural Productivity*

An increase in labor productivity in the agricultural sector can be described by an "upward" shift of the entire total physical productivity (TPP) curve of Diagram 1.3. Such productivity increases are depicted in Diagram 2.3 by a sequence of TPP curves marked *I*, *II*, *III* . . . etc. among which the *I*-curve is the initial TPP curve (as in Diagram 1.3) and *II*, *III* . . . represent the TPP curves after successive doses of agricultural investment. (For the present we assume no change in industrial productivity.)

⁹ From a strictly logical standpoint the industrial supply curve of labor must be derived from the totality of conditions emerging from our analysis of the agricultural sector. The relevant conditions include (1) the agricultural real-wage curve, (2) the AAS curve, and (3) a consumer preference map specifying preferences for agricultural vs. industrial goods. Space limitations prevent us from rendering a rigorous derivation of the industrial real wage at each point through the terms-of-trade mechanism.

INDUSTRIAL SECTOR



AGRICULTURAL SECTOR

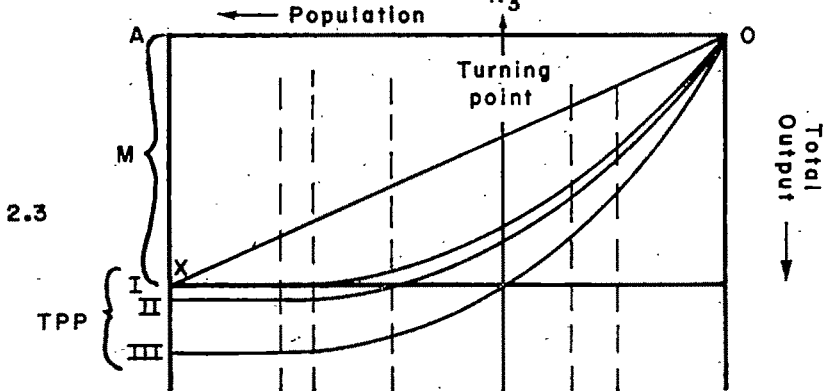
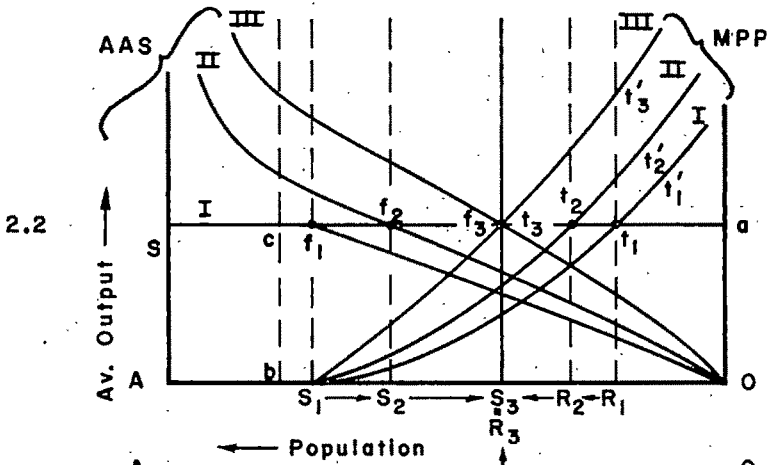


DIAGRAM 2

Let us make the assumption that as agricultural productivity increases the institutional wage remains unchanged, i.e. SA in Diagram 2.2 equals the slope of OX in Diagrams 1.3 and 2.3 as determined by the initial TPP curve.¹⁰ In Diagram 2.2 we may now plot the sequence of marginal physical productivity of labor curves marked $I, II, III \dots$ (all containing the flat portion AS_i) and the sequence of average agricultural surplus curves marked $I, II, III \dots$ corresponding to the total physical productivity curves $I, II, III \dots$ in Diagram 2.3. According to the method already indicated, we can now determine the three phases for each level of productivity, i.e., the sequence of shortage points, $S_1, S_2, S_3 \dots$ and the sequence of commercialization points, $R_1, R_2, R_3 \dots$. Reference to these points will facilitate our analysis of the effects of an increase in agricultural productivity on the supply-price curve of agricultural labor and on the AAS curve.

As depicted in Diagram 2.2, for every amount of labor employed in the agricultural sector, an increase in agricultural productivity also shifts the marginal physical productivity curve upward.¹¹ As a consequence, the agricultural labor supply price curve is transformed from Sh_1' to Sh_2' to $Sh_3' \dots$ etc. with a shortening of its horizontal portion (i.e., phase 3 arrives earlier) as the sequence of commercialization points $R_1, R_2, R_3 \dots$ gradually shifts from right to left. On the other hand, the sequence of shortage points $S_1, S_2, S_3 \dots$ etc. gradually moves from left to right. This is due to the fact that, for each amount of labor allocated to the industrial sector, the AAS increases with the increase in total physical productivity; the amount of food consumed by agricultural labor remains unchanged, leaving more TAS (and hence AAS) for the industrial workers. Thus the effect of our increase in agricultural productivity is an upward shift of the AAS curve (to positions marked $II, III \dots$).

Sooner or later, the shortage point and the commercialization point coincide, the distance $S_1R_1, S_2R_2, S_3R_3 \dots$ vanishes and phase 2 is eliminated. In Diagram 2.2 such a point of coincidence is described by $R_3=S_3$. We shall call this point the turning point. There exists one level of agricultural productivity which, if achieved, will bring about this turning point. (In Diagram 2.3 this level of agricultural productivity is described by TPP curve III).

¹⁰ It is, of course, possible that the institutionally determined agricultural wage will be permitted to rise; but as the economy becomes increasingly capitalistic it seems highly doubtful that nonmarket forces in agriculture will be strengthened and thus prevent the closing of the artificial marginal productivity-wage gap. A second, and possibly more powerful, qualification arises from the fact that the institutional wage level in agriculture may be sufficiently close to caloric subsistence so that raising it may constitute a highly productive form of investment. We do not, however, consider this possibility in the context of the present model. Concerning the relative position of the industrial wage level see footnote 8.

¹¹ This is a reasonable assumption if the shift in TPP is proportional.

Let us now investigate the impact of an increase of agricultural productivity on the industrial supply curve L_1L_1 depicted in Diagram 2.1. On the one hand, the upward shift of the AAS curve will shift the industrial supply curve downward *before* the turning point. This is due to the fact that an increase of AAS will depress the terms of trade for the agricultural sector and, with the same institutional wage (in terms of agricultural goods) paid to the industrial workers, the industrial wage (in terms of industrial goods) must decline. On the other hand, the upward shift of the MPP curve which is accompanied by a higher real wage in the agricultural sector *after* the turning point raises the industrial supply curve after that point. Thus we see, for example, that the L_2L_2 curve crosses the L_1L_1 curve from below, indicating that ultimately the "terms-of-trade effect" (due to an increase of AAS) has been overcome by the "real-wage effect" (due to an increase of MPP). For purposes of this paper, we are, however, not very much concerned with phase 3 which lies beyond the turning point.

Let us now examine more closely the relative positions of the industrial supply curves before phase 3 is reached. Let the horizontal portion L_1P_1 of the initial industrial supply curve L_1L_1 be extended up to P_3 , the turning point, and let us call this horizontal line segment L_1P_3 the balanced-growth path (for reasons which will be fully explained in the next section). We may then claim that all the industrial supply curves between L_1L_1 (i.e. the initial one) and L_2L_2 (i.e., the one corresponding to the turning point) cross the balanced-growth path at the respective shortage points. This is due to the fact that at the shortage point for each case (e.g., point f_2 in Diagram 2.2 for the case of industrial supply curve L_2L_2 in Diagram 2.1) the subsistence wage rate and the AAS take on the same value as that prevailing in phase 1 before any increase in agricultural productivity has been recorded. Hence the same real wage, in terms of industrial goods, must prevail at the shortage point as prevailed previously. In short, before the turning point, the industrial labor supply curve lies above (below) the balanced growth path when the AAS curve lies below (above) the horizontal line Sa , causing a deterioration (improvement) of the industrial sector's terms of trade.

The economic significance of the equality between our turning point and the (final) shortage point is that, before the turning point, the economy moves along its balanced-growth path while exploiting (or making the best of) its under-employed agricultural labor force by means of increases in agricultural productivity. The economic significance of the equality between our turning point and the commercialization point is that, after the turning point, the industrial supply curve of labor finally rises as we enter a world in which the agricultural sector is no longer dominated by nonmarket institutional forces but assumes the characteristics of a commercialized capitalistic system.

III. *Changes in Industrial Productivity and Balanced Growth*

In addition to investment in the agricultural sector, the other major aspect of growth which must be considered is the simultaneous process of investment in the industrial sector. We know, moreover, that such activities in the two sectors do not constitute independent activities. For, from the output side, the two sectors must provide the marketing outlets for each other's products; and, from the input side, the industrial sector must provide the employment opportunities for the absorption of workers released by the agricultural sector. Consideration of this basic interdependence during the take-off process is really nothing else but consideration of the "balanced growth" problem, a key concept in the current development literature.¹² The purpose of this section is to formulate the problem of balanced growth rigorously and to investigate its significance in the context of our model.

Referring to Diagram 2.1 we see that during the take-off process the demand curve for labor, $i_1i_1, i_2i_2 \dots$, gradually shifts upward to the right as real capital is accumulated in the industrial sector. Simultaneously the investment activity proceeding in the agricultural sector shifts the supply curve of labor $L_1L_1, L_2L_2 \dots$ downward in the same direction. The central problem of balanced growth concerns the synchronization through time of the shifts of the two sequences of curves. At any moment of time during the take-off process, the question is how should the total investment fund be allocated to the two sectors to ensure that they are "harmonious" from the point of view of both the input and the output criteria.

The output criterion, i.e. provision of mutual market outlets, specifies that the allocation of investment funds must be such as to continuously sustain investment incentives in both sectors of the economy. In the context of our model, this means that the terms of trade between the two sectors should not deteriorate substantially against either sector. The input criterion, on the other hand, specifies that the allocation of the investment fund must be such as to enable the industrial sector to demand, at the constant industrial real wage consistent with the output criterion, the precise number of new workers now freed as a result of the investment activity in the agricultural sector. We shall now proceed to show that a balanced-growth path satisfying these conditions exists as an integral part of our model.

Let the initial demand curve for industrial labor at the break-out point be indicated by i_1i_1 and the initial supply curve by L_1L_1 in Diagram 2.1, with OB units of labor already employed in the industrial

¹² See especially R. Nurkse [5] and [6, p. 192]: "Without [agricultural] reorganization the labor surplus in agriculture remains largely potential. On the other hand, reorganization may well prove impracticable without an active policy of absorbing the surplus manpower."

sector. (While it is realistic to assume that some industrial establishment already exists during the preconditioning period and is inherited at the beginning of the take-off process, it is also realistic to assume that the initial industrial labor force OB is very small.) At this level of employment the industrial sector is making a profit represented by the shaded area B_0 (Diagram 2.1) which may be taken to represent the economy's investment fund at this stage.¹³ This investment fund is to be allocated in part to the agricultural sector, thus raising agricultural productivity and shifting the industrial supply curve to the right, and in part to the industrial sector, thus raising the industrial capital stock and shifting the industrial demand curve to the right.

If the balanced growth criterion is to be satisfied, the new industrial demand curve, e.g., i_1i_2 , and the new industrial supply curve, e.g., L_1L_2 , must intersect at a point, e.g., P_2 , lying on the balanced-growth path (L_1P_1). Otherwise the stability-of-the-terms-of-trade condition is violated. At P_2 , where the balanced-growth criterion is met, the industrial sector will have absorbed O_0P_2 additional workers, which is the same number of workers which has been released by the agricultural sector (i.e., cf_2 in Diagram 2.2 equals O_0P_2 in Diagram 2.1).

Thus, as investment activity in both sectors proceeds through time, the balanced-growth path describes the actual growth path if the balanced-growth criterion is satisfied. It is, of course, likely that the actual growth path will deviate from the balanced-growth path in one direction or the other from time to time. Such a deviation, however, will call into play countervailing equilibrating forces which tend to bring it back to the balanced-growth path. The actual growth path is, in fact, likely to be oscillating around the balanced-growth path.

For example, if the actual growth path is above the balanced-growth path, say at e_2 in Diagram 2.1 (as would be the case if investment in the agricultural sector had shifted the industrial supply curve to L_2L_3 and investment in the industrial sector had shifted the industrial demand curve to i_2i_3), we have a case of overinvestment in the industrial sector. The shortage of food will result in a deterioration of the terms of trade of the industrial sector and will cause an increase in the industrial real wage. This will tend to discourage investment in the industrial, and tend to encourage investment in the agricultural sector, thus causing the actual growth path to turn back toward the balanced-growth path. Government policy may be assumed to work in the same direction if the price system proves inadequate. In this fashion, the economy,

¹³ If, for the sake of simplicity, capitalists' consumption can be ignored. It should be noted that the agricultural sector (Diagram 2.2) makes no contribution to the investment fund since the entire agricultural output (area $OaSA$) is just adequate to meet the consumption requirements of the agricultural workers (area $Obaa$) and the consumption requirements of the industrial workers (area $AScb$).

proceeding along an actual growth path which coincides with or oscillates around the balanced-growth path, moves towards the turning point, P_2 , previously defined.¹⁴

IV. *Empirical Relevancy of the Basic Model*

In order to formulate our model more rigorously and render it amenable to statistical verification certain restrictive assumptions, not required for our previous qualitative analysis, must now be accepted. The first such assumption, that the marginal physical productivity of labor changes at a constant rate as employment in the agricultural sector varies, is concerned with the shape of the initial total physical productivity curve. This means that the initial MPP curve (I in Diagram 2.2) is composed of two straight-line segments: a horizontal segment, AS_1 , coinciding with the horizontal axis, and a segment S_1A' for the range of positive marginal physical productivity. The two segments are connected at point S_1 marking off the redundant agricultural labor force (AS_1 in Diagram 2.2). Under these assumptions, it can be shown (see the Appendix for all detailed derivations) that the initial TPP curve takes on the following form:

$$(1) \quad y = \begin{cases} M \left[-\left(\frac{x}{TL}\right)^2 + 2\left(\frac{x}{TL}\right) \right] & \text{for } x \leq TL \\ M & \text{for } x > TL \end{cases}$$

where the variables x and y , and the parameters M , T and L have the following economic and diagrammatic (Diagram 2.3) interpretation: (i) y =total agricultural output (measured downward from point O); (ii) x =labor force employed in the agricultural sector (measured to the left of point O); (iii) M =maximum agricultural output (the distance AI); (iv) L =size of the population at the break-out point (the distance OA); (v) T =the fraction of L which is nonredundant, i.e., TL is the nonredundant labor force (the distance OS_1 in Diagram 2.2) and $(1-T)L$ is the redundant labor force (the distance S_1A). The parameter T or nonredundancy coefficient may take on any nonnegative value. If T is less than 1, $(1-T)L$ is the redundant labor force at the break-out point. If T is greater than 1, $(T-1)L$ is the addition to the agricultural labor force L which would be tolerated before any portion of the agricultural labor force becomes redundant, i.e., of zero marginal physical

¹⁴ The "unlimited" portion of Lewis' supply curve of labor may thus be interpreted as an *ex post* supply curve defined as the locus of all points on our balanced-growth path under conditions of continuous increases in agricultural productivity. Neither we nor Lewis should, however, discount the possibility that the actual growth path may, in fact, be gently upward-sloping rather than horizontal. Such a growth path would imply gradually rising levels of the industrial real wage during the take-off period. (Also see footnote 8.)

productivity. The case of T less than 1 is depicted in Diagram 2.3.¹⁵

Our second restrictive assumption is that an increase in agricultural productivity shifts the entire TPP curve "upward" proportionally. In other words, the new TPP curve is obtained by multiplying the initial TPP curve by a constant k which will be called the productivity coefficient. As the productivity coefficient takes on successively larger values, a sequence of TPP curves (*II*, *III*, etc.) is generated, as depicted in Diagram 2.3.¹⁶

From the TPP curves we can easily derive expressions for the institutional wage, the marginal physical productivity (MPP) curves, and the average agricultural surplus (AAS) curves:

(2) $W = M/L$ (agricultural wage represented by distance AS in Diagram 2.2 or the slope of OX in Diagram 2.3)

(3) $y' = \frac{2kM}{(TL)^2}(-x + TL)$ (marginal physical productivity curve for the nonredundant agricultural labor force in Diagram 2.2; $0 < T \leq 1$)

(4) $AAS = \frac{ky - xW}{L - x}$ (average agricultural surplus curve)

These variables are functions of x (i.e. the agricultural labor force), with M , T and L as parameters and k the exogenous productivity coefficient.

A major objective of our model is to derive an expression for TALF, the turning-point agricultural labor force, represented by the distance OS_1 in Diagram 2.2. TALF is a fraction, V_t , of the total population L , i.e., $TALF = V_t L$. By solving for the turning-point value of k the following expression for V_t can be derived from (1) through (4):¹⁷

$$(5) \quad V_t = 1 + T - \sqrt{1 + T^2}.$$

This percentage of the population in agriculture at the turning point (V_t) depends only on T , the coefficient of nonredundancy. From the economic standpoint, this means that our model is independent of the size (i.e., the scale) of the economy (as described by the absolute population size, L , or the absolute amount of initial agricultural output, M).

¹⁵ There are those, e.g., Harry Oshima [8, p. 259], who believe that the MPP of agricultural labor in an underdeveloped area never really drops to zero. This position is represented by the second case, i.e., $T > 1$, for no one will probably deny that, with a fixed amount of land, there will be *some* size of agricultural population which is large enough to render MPP zero. While both cases are treated systematically in the appendix, for reasons of ease in exposition we only present the case for $0 < T \leq 1$ in the text. The conclusions for both cases are, however, incorporated in the body of the paper.

¹⁶ Notice that under these assumptions all the MPP curves contain the same horizontal segment AS_1 .

¹⁷ As shown in the Appendix.

To subject our model to its first test of empirical relevancy, let us examine (Table 1) the values of V_i for a range of values for T (from .7 to 3) which represents, we think, a reasonable spectrum covering most countries. A small T , or a small nonredundancy coefficient, means that a country is initially unfavorably endowed with natural resources, i.e., a low land-labor ratio. Though precise estimates are scarce, most interested observers are agreed that the redundant labor force could be as high as 30 per cent in the densely populated regions of Asia, e.g., Pakistan, India, Ceylon. A nonredundancy coefficient of $T=.7$ thus represents the country with the most unfavorable initial resource endowment. At the other extreme of the spectrum lie certain Western countries, possibly Denmark, which have already completed their take-

TABLE 1

T	.7	.8	.9	1	1.1	1.2	1.3	1.4	2	3
V_i	.48	.52	.55	.58	.61	.64	.66	.68	.75	.80

off process. There is, of course, even less statistical knowledge of the nonredundancy coefficient for any such country at the relevant point in its history; we have picked a more or less arbitrary upper value of $T=3$, although we are by no means committed to any such figure.¹⁸

For this reasonable range of values for T , the corresponding values for V_i extend from approximately 50 to 80 per cent. This means that at the end of the take-off process our model "predicts" that from 20 to 50 per cent of the total labor force must have been allocated to the industrial sector. Commonly held notions concerning these magnitudes suggest that our results also are reasonable.

From this table we can also see that the value for V_i increases as the value of T increases, a generally valid relation which can be easily established by taking the first derivative of (5). The economic interpretation of this relationship is straightforward: the larger the nonredundancy coefficient the more favorable (relatively) the initial resource endowment; and the more favorable this endowment the more likely that the economy will still be agriculture-oriented (as measured by a relatively large value of V_i) at the turning point. Conversely, the smaller the non-

¹⁸ Notice that V_i approaches 1 as T approaches infinity so that the value of V_i is not very sensitive to the change in T as T becomes larger. Hence we need not be overly concerned with the upper limit for the range of values postulated in Table 1. A large T , incidentally, should not be confused with the possibility that primary production, in say, Australia may always have been organized on a plantation basis, therefore never part of the "agricultural" sector as defined by us (footnote 2). As pointed out earlier, our model is not relevant where the entire economy is commercialized at the outset.

redundancy coefficient, the more unfavorable the initial resource endowment and the more likely that the economy will have to be industry-oriented (as measured by a relatively small value of V_t) by the time of completion of the take-off process.¹⁹ For the former (agriculture-oriented) case associated with some more advanced economies our theory then "predicts" a turning-point agricultural labor force upward of 65 per cent (for T greater than 1.2). For the latter (industry-oriented) case associated with the contemporary underdeveloped countries of Asia, our theory "predicts" a turning-point agricultural labor force downward of 55 per cent (for T smaller than .9). Evidently, if the take-off process is to be successfully completed the resource-poor countries, in which we are primarily interested here, will have to re-allocate a higher percentage of their total labor force to industry than did some of their better-endowed Western counterparts. And this already difficult task is further complicated by the fact that these countries are usually subject to severe population pressures at this stage. We now proceed to integrate this important facet of the developmental problem into our model.

V. *Population Growth and the Minimum Effort*

Let us assume that, in the course of the take-off, the economy experiences a population increase of 100s per cent. Let the total population at the turning point be denoted by L_t . Then

$$(6) \quad L_t = (1 + s)L$$

where L is the size of the population at the break-out point. For such an increase in population the average agricultural surplus (AAS) function becomes:

$$(7) \quad \text{AAS} = \frac{ky - xW}{L(1 + s) - x}$$

When this equation is used in place of (4), we can derive the following expression:

$$(8) \quad V_t = 1 + \frac{T}{1 + s} - \sqrt{1 + \left(\frac{T}{1 + s}\right)^2}$$

¹⁹ Since, in our system, only the commercialized sector is in a position to earn profits and save, this conclusion is consistent with Lewis' prediction [4, p. 27] that "profit margins will be lowest in countries which reach their second stage [turning point] earliest and will be highest in countries where the second stage is longest delayed."

where V_t is the turning-point agricultural labor force (TALF) expressed as a fraction of L_t , i.e., $\text{TALF} = V_t L_t$. (In other words, when there is an increase in population, we use the total population L_t at the turning point, rather than that at the break-out point, as the basis for computing the TALF fraction).

Comparing (5) and (8), we see that our analysis in the last section, assuming no population growth, now reduces to a special case. Furthermore, as far as the impact on V_t is concerned, population increase is equivalent to a decrease in the value of the nonredundancy coefficient, T . This underlines the fact that both phenomena constitute a worsening of the economy's resource base. It follows that, for a given value of T , the larger the population increase (i.e. the larger s) the lower the value of V_t and hence the more industry-oriented the economy will have to be at the turning point.

The significance of expression (8) may now be more fully investigated. In Diagram 3, let time be measured on the horizontal and population on the vertical axis. Let the initial, or break-out population, L , be represented by the distance Ob_0 at the 0th year and the growth of population through time be described by the curve b_0bB , which we shall call the population growth curve (PGC). Population growth will be treated as a known phenomenon exogenous to our model.

As population increases the industrial sector will obviously have to absorb more labor by the time the turning point is reached. In fact, the industrial sector will have to absorb not only more labor absolutely but a higher percentage of the enlarged total population. We may then ask the following hypothetical question: what will be the absolute size of the industrial labor force, L_{it} , and of the agricultural labor force, L_{ia} , at the turning point, if the take-off process is to be completed in τ years? Let the total turning point population L_t be represented by the distance $b\tau$. Since, for a given τ , the population growth curve gives us the values for both L and L_t , we can immediately determine the multiple factor $1+s(\tau)$ in (6). [Notice that s is now written as a function $s(\tau)$ of τ .] When the value for $1+s(\tau)$ is substituted in (8), we obtain:

$$(9) \quad V_t(\tau) = 1 + \frac{T}{1+s(\tau)} - \sqrt{\left(1 + \frac{T}{1+s(\tau)}\right)^2}$$

as the fraction of the total population in the agricultural sector at the turning point. It is now expressed as a function of τ , the specified length of time for the completion of the take-off process, treating T , the nonredundancy coefficient, as a parameter. From this equation, we can easily determine the absolute size of the turning-point industrial labor

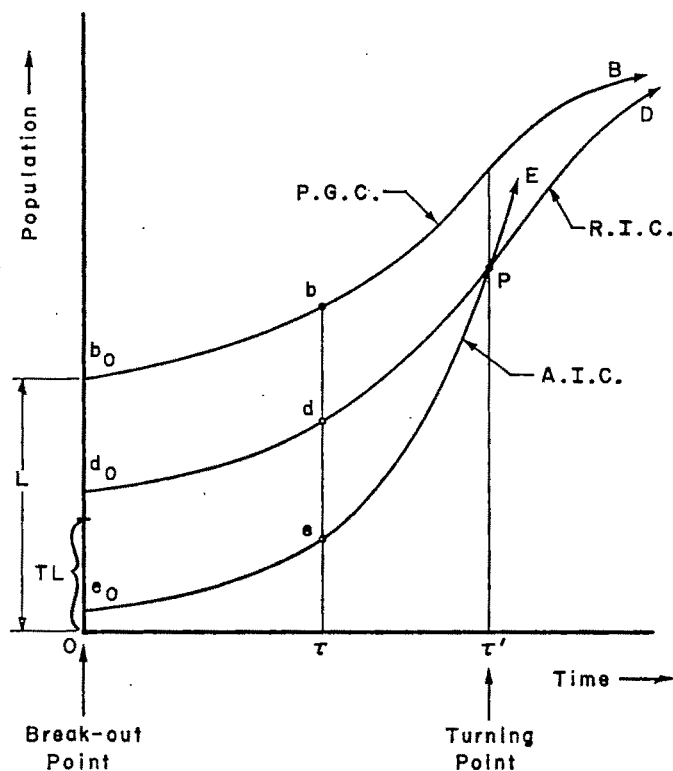


DIAGRAM 3

force L_{ti} and of the turning point agricultural labor force L_{ta} as a function of τ .

$$(10) \quad \begin{aligned} (a) \quad L_{ti} &= [1 - V_i(\tau)][1 + s(\tau)]L \\ (b) \quad L_{ta} &= V_i(\tau)[1 + s(\tau)]L \end{aligned}$$

where $V_i(\tau)$ is defined in (9).

The curve corresponding to (10a), i.e., d_0dD , is plotted in Diagram 3. We shall call this curve the required industrialization curve (RIC). [The vertical distance between RIC and PGC is represented by (10b)]. RIC marks off the absolute size of the population which must be absorbed by the industrial sector if the turning point is to occur at the time indicated on the horizontal axis. As we can see directly from equation (9), the value for $V_i(\tau)$ approaches 0 as τ increases. This means that RIC bends towards PGC as the time required for the take-off is lengthened. The economic significance of this phenomenon is that the

longer it takes to reach the turning point, i.e., the more time there is for the Malthusian devil to assert itself, the heavier the burden on the industrial sector in terms of the absorption of agricultural workers required. RIC indicates the total absorption requirements for each and every τ or length of the take-off process.

This important concept of a required industrialization curve may be interpreted in terms of a critical minimum effort thesis. It means that, for every value of τ , a certain minimum investment activity must be carried on in both the industrial and agricultural sectors during every year of the take-off process, from year 0 to year τ . For, as we have seen, investment in the industrial sector must be adequate to provide employment opportunities for the enlarged industrial labor force; and investment in the agricultural sector must be adequate to increase agricultural productivity sufficiently to feed the increased population in the face of a possibly reduced agricultural labor force. Thus, whether or not the take-off process can, in fact, be completed in τ years depends on whether or not the required effort is forthcoming in the intervening years.

To further clarify this point, let us now, in juxtaposition with the above-described required industrialization curve (RIC), postulate an actual industrialization curve (AIC) which shows the amount of labor actually absorbed by the industrial sector at each point in time. The equation for this curve may be written as

$$(11) \quad E_i = \phi(t)$$

where t measures time and E_i the actual size of the industrial labor force at time t . This curve is denoted by e_0eE in Diagram 3. At time τ , for example, out of the total labor force or population $b\tau$ the amount *actually* absorbed by the industrial sector equals $e\tau$. At the same time, as we have already seen, the amount of labor which *needs* to have been allocated to this sector is $d\tau$ if turning point is to occur at this time. Hence, in this case, it is impossible to achieve the turning point at time τ . It follows that the take-off process can be successfully completed if and only if AIC and RIC intersect, e.g., at point P , after τ' years.

The position of AIC then depends on the national effort, measured in terms of investment expenditures in both sectors, actually forthcoming in the course of the take-off process. With a larger national effort AIC rises more steeply and intersects RIC at an earlier date, i.e. a smaller τ . Conversely, with a smaller national effort AIC rises more slowly and intersects RIC at a later date; or, alternatively, it does not intersect it at all.

To investigate this problem, let us assume, for the sake of simplicity, that labor is actually being absorbed by industry at a constant annual rate i . AIC in (11) then takes on the following concrete form:

$$(13) \quad E_i = L(1 - V)e^{it}$$

where i , the rate of growth of the industrial labor force, may be taken as a summary index of the national effort.²⁰

In order to enable us to estimate the length of the take-off process with the help of our model, let us assume that the population grows at the constant rate r . PGC is then represented by

$$(14) \quad P = Le^{rt}$$

and, for this particular PGC, RIC in (10a) becomes

$$(15) \quad L_{ti} = [1 - V_i(\tau)]e^{rt}L$$

where, using (9), $V_i(\tau) = 1 + Te^{-r\tau} - \sqrt{1 + (Te^{-r\tau})^2}$

We know from our previous discussion that, if the take-off process is to be completed in τ years, the RIC and AIC must intersect at $t = \tau$. Thus the value of τ must satisfy the following equation [obtained by equating (13) and (15)]:

$$(16) \quad L(1 - V)e^{i\tau} = L[1 - V_i(\tau)]e^{r\tau}$$

signifying the intersection of the two curves. Equation (16) enables us to solve for i explicitly in terms of τ :

$$(17) \quad i = r + \frac{\ln(1 - V)}{\tau} + \frac{\ln[1 - V_i(\tau)]}{\tau}$$

We can therefore determine the minimum annual effort, as summarized by i , for any given value of τ . Conversely, if we know i we can determine τ , the duration of the take-off process.

²⁰ And $1 - V$ is the fraction of the initial population engaged in industry. The significance of i as a national effort index is, of course, by no means a simple matter. A larger i means a faster annual rate of labor absorption by the industrial sector; but this, it should be recalled, necessitates both a higher rate of investment in the agricultural sector, to feed the growing population (in the face of a possible absolute diminution of the agricultural labor force), and a higher rate of investment in the industrial sector, to absorb the newly freed agricultural workers—with allocations between the two sectors obeying our balanced-growth criterion. The national effort behind i is thus a function of the absolute size of the investment fund which can be made available in each year during the course of the take-off process and a function of the efficiency of its use in the two sectors. For the industrial sector, for example, if we assume that only capital-widening takes place, then i also indicates the required annual rate of investment. With respect to the investment requirements of the agricultural sector, the rate of increase of agricultural output must be at least equal to that of the total population and the required annual rate of increase in agricultural productivity can be uniquely determined. Admittedly the real measure of sacrifice lies in the rate of accumulation of profits. But linking this with the rate of industrialization and the rate of change of agricultural productivity which lie behind i requires precise knowledge of the relative efficiency of investment and the impact of technological change on the two sectors. An elaboration of this aspect of the dynamic balanced-growth problem is currently under investigation by the authors but would take us beyond the confines of the present paper.

Before subjecting this result to further conditional testing it remains to generalize our model to bring it an important step closer to reality. In addition to the consumption requirements of both industrial and agricultural workers at the institutional wage there may well be other claims on (or markets for) agricultural output. Specifically, the industrial sector may require raw materials and the industrial worker may require a wage premium over the institutional wage level in agriculture. We may classify these demands as proportional to the industrial labor force, $L(1+s)-x$, with d as the factor of proportionality.²¹ Other, hitherto neglected, markets include landlord consumption requirements and export demand for agricultural products.²² We may classify these demands (for want of a better hypothesis) as proportional to the growth of total agricultural output, with $1-\theta$ as the factor of proportionality. When we subtract these additional items from total agricultural output, we obtain

$$(18) \quad AAS = ky - xW - dW[L(1+s) - x] - (1-\theta)ky$$

in place of (7). With these complications incorporated in our model, and with a given PGC, the following expression can be derived (see appendix) for V_t , the turning-point agricultural labor force as a fraction of the total turning-point population:

$$(19) \quad V_t(\tau) = \frac{1}{(\theta + 2d)(1 + s(\tau))} \left[(\theta + d)T + [1 + s(\tau)](1 + d) - \sqrt{[dT - (1 + s(\tau))(1 + d)]^2 + (\theta + 2d)T^2\theta} \right].$$

V_t is thus a function of parameters T , θ , d and s and we see that our previous formulation in (8) becomes a special case of (19) if we let $d=s=1-\theta=0$. Furthermore, it can be shown that as T increases or as s decreases the value of V_t increases, which is the identical conclusion reached for the simple case.

The analysis of the duration of the take-off process can then once again be summarized by (17) above, but with $V_t(\tau)$ now defined by (19) instead of (15). Using (17), we may now obtain varying values for i with varying values for τ , r , T , V , θ and d . The results are presented in Table 2.²³ They permit us to determine the minimum annual effort

²¹ For computational convenience d can be measured in terms of institutional wage units, W . For example, suppose this "additional" support of industrial workers takes the form of raw materials plus wage premiums to the amount of \$2 per worker and the institutional wage is \$4 per worker; then d equals .5.

²² The authors are currently investigating the fuller open-economy implications of the model.

²³ Parameters V , θ and d have been estimated from relevant empirical data, principally for Japan in the late nineteenth century. The estimate for V ($\approx .8$) is based on [7], θ ($\approx .9$) on

for any given value of τ . Conversely, if we know the average annual effort, i , which can be elicited we can derive τ , the duration of the take-off process.²⁴

TABLE 2—AVERAGE ANNUAL MINIMUM EFFORT (i) ($\theta=.9$, $d=1.3$, $V=.8$) (per cent)

(T=.7)					(T=.9)				
τ (years)					τ (years)				
r	5	20	35	50	r	5	20	35	50
1.0	8.15	3.05	2.29	1.99	1.0	6.00	2.58	2.07	1.85
2.0	9.52	4.34	3.51	3.16	2.0	7.47	3.96	3.36	3.08
2.5	10.19	4.96	4.10	3.71	2.5	8.20	4.62	3.97	3.66
3.0	10.86	5.56	4.67	4.26	3.0	8.92	5.26	4.57	4.21
3.5	11.53	6.16	5.22	4.79	3.5	9.63	5.89	5.14	4.76

For application to the heavily labor-surplus areas of Asia, e.g. India and Pakistan, the left-hand side of Table 2 is perhaps more relevant. With annual population growth estimated in the vicinity of 2.5 per cent the annual minimum effort in terms of the annual growth of the industrial sector must be more than 10 per cent if take-off is to be achieved within a five-year period. If the country, more realistically, sets a take-off completion goal of 20 or 50 years, the industrial sector must grow at only 4.96 or 3.71 per cent, respectively. Moreover, if population-control programs now under way are successful in bringing the population growth rate down to, say, 1 per cent, the equivalent burden on the economy in terms of minimum effort would be further lowered to 3.05 and 1.99 per cent, respectively. For the case of a Latin American or African country where we can afford to be somewhat more optimistic with respect to the initial resource endowment, the right-hand side of Table 2 may have more relevance.

With the help of Diagram 4, the results of this section may be briefly summarized in the form of a number of comparative static "theorems." Evidently, the larger the annual effort, the shorter the take-off process. This simply confirms the well-known advantage of economies capable

[10], and d (1.3) largely on the results of a recent unpublished input-output study for 1953-54 by the Indian Statistical Institute, Calcutta. Independent estimates for T are admittedly more difficult to come by. We have used two of the more frequently made "guesstimates" covering the range of the plausible (.7 and .9). Well-behaved r is permitted to vary from 1 to 3.5 and τ from 5 to 50.

* The authors are currently engaged in further testing the empirical validity of the model and thus its predictive value, by examining the extent to which it provides a consistent explanatory framework in the case of countries whose take-off has already been completed. Theoretical performance indices thrown up by the model can, for example, be compared with actual performance indices for given economies over given periods. While an elaboration of this effort takes us beyond the intended scope of the present paper, it may not be inappropriate to report encouraging first results, dealing with the case of Japan.

sufficiently large, successful take-off may prove impossible altogether. This observation simply confirms the notion that some economies may be unable to reach the turning point, no matter how long they are willing to wait, because their resource endowment or their motivations are inadequate. This situation is represented in Diagram 4 by AIC e_0P_0 which, it will be noted, does not intersect RIC at any point regardless of the time period permitted. It is perhaps only in this sense that we may speak of a unique critical minimum effort as that minimum annual rate of growth of the industrial labor force which just leads to tangency with the relevant RIC. If i falls below this critical minimum, the value for τ will be infinitely large. For such a country, since the turning point does not occur and the take-off process is not successfully completed, we may say, without violating common sense, that the process has never really begun. The economy is really experiencing only a temporary departure from stagnation and is, in fact, still in its pre-conditioning stage.

As we can see from equation (17), the take-off can occur only if $i > r$; if $i = r$ or $i < r$, no matter how large a τ is permitted, take-off becomes impossible. If r increases, usually due to a fall in mortality, the economy must either bring it back down again, through a lowering of fertility by means of a planned parenthood program, or must increase its national development effort, i , by further tightening its belt. It should thus be emphasized that the concept of a critical minimum effort cannot have an independent life but must be defined in terms of a given rate of population growth as well as a given target date for completion of the take-off process. A "big push" is required not to achieve a once-and-for-all departure from stagnation but to provide a sustained effort over time relative to the strength of the Malthusian pressures at hand and the growth aspirations of a given society. Using the by now familiar analogy, it is not sufficient for a plane to achieve an initial velocity permitting it to escape the earth's gravitational pull; it must be able to carry enough fuel to enable it to get over the surrounding mountains and reach its destination at a speed dictated by the ambitiousness of the pilot.

What we have thus attempted in this paper is to construct an explanatory model of the less developed economy's transition from stagnation to self-sustaining growth. In the course of this attempt a number of familiar notions current in the literature on development have been stated in a rigorous way and assimilated into what we consider to be a meaningful pattern. A reformulation of the assumptions underlying the Lewis unlimited supply curve of labor enabled us to define the take-off process in a nonarbitrary fashion and, with the help of a balanced growth concept for the short run and a refurbished minimum effort

thesis for the long run, to elaborate the conditions for its successful completion.

REFERENCES

1. B. F. HOSELITZ, "Non-Economic Factors in Economic Development," *Am. Econ. Rev., Proc.*, May 1957, 47, 28-41.
2. HARVEY LEIBENSTEIN, *Economic Backwardness and Economic Growth*. New York 1959.
3. ARTHUR LEWIS, "Development with Unlimited Supplies of Labour," *The Manchester School*, May 1954, 22, 139-92.
4. ———, "Unlimited Labour: Further Notes," *Manchester School*, Jan. 1958, 26, 1-32.
5. RAGNAR NURKSE, *Problems of Capital Formation in Underdeveloped Areas*. New York 1953.
6. ———, "Reflections on India's Development Plan," *Quart. Jour. Econ.*, May 1957, 71, 188-204.
7. KAZUSHI OHKAWA, *The Growth Rate of the Japanese Economy Since 1878*. Tokyo 1957.
8. HARRY OSHIMA, "Underemployment in Backward Economies—An Empirical Comment," *Jour. Pol. Econ.*, June 1958, 66, 259-64.
9. GUSTAV RANIS, "Economic Development: A Suggested Approach," *Kyklos*, 1959, 12, 428-48.
10. ———, "Financing Japanese Economic Development," *Econ. Hist. Rev.*, 1959, 11, 440-54.
11. W. W. ROSTOW, "The Take-Off into Self-Sustaining Growth," *Econ. Jour.*, March 1956, 66, 25-48.

APPENDIX

By JOHN C. H. FEI AND GUSTAV RANIS

I. Total Product and Marginal Product Functions

In diagrams A.1 and A.2 let point O be the origin and let the agricultural population, x , be measured on the horizontal axis to the left of O . The TPP (total physical productivity) function, $f(x)$, and the MPP (marginal physical productivity) function, $f'(x)$, are measured on the vertical axis; downward for $f(x)$ and upward for $f'(x)$.

Let the initial agricultural population be L (located at point S in both diagrams A.1 and A.2) and let the total output for $x=L$ be M (located at point S'). Let the nonredundant labor force in each case be TL (i.e., located at point P). The definition of the nonredundant labor force is $f'(x)=0$ for $x \geq TL$.

In deriving the TPP function, two cases must be distinguished, namely, $0 < T \leq 1$ (diagram A.1) and $T > 1$ (diagram A.2.) The first case means that a part of L , to be more precise, $(1-T)L$, is already redundant. The second case means that the existing supply of land *could* have tolerated a further increase [to the amount of $(T-1)L$] of population beyond the initial population, L , before any portion of the population would become redundant. Assuming that $f''(x)=0$ (i.e., the MPP function is a straight line), the TPP function, $f(x)$, must satisfy the following conditions for the two cases just distinguished:

- (1) (a) $f''(x)=0$ (MPP curve is formed of straight lines)
- (b) $f'(x)=0$ (MPP curve is a horizontal line beyond point P) for $x \geq TL$
- (c) $f(0)=0$ (TPP curve starts from the origin)
- (d) $\begin{cases} f(x)=M & \text{for the case } 0 < T \leq 1 \text{ (diagram A.1) for } x \geq TL \\ f(L)=M & \text{for the case } T > 1 \text{ (diagram A.2)} \end{cases}$

It is easy to prove that the TPP function, $f(x)$, will take on the following forms if all the conditions in (1) are to be satisfied:

$$\begin{aligned}
 (1) \quad (a) \quad y &= \begin{cases} M[-(x/TL)^2 + 2(x/TL)] & \text{for } x \leq TL \\ & \text{for the case } T \leq 1 \text{ (diagram A.1)} \\ M & \text{for } x > TL \end{cases} \\
 (b) \quad y &= [M/(2T-1)][-(x/L)^2 + 2T(x/L)] \quad \text{for } x \leq TL^{25} \\
 & \quad \text{for the case } T > 1 \text{ (diagram A.2)}
 \end{aligned}$$

²⁵ TPP is constant for $x \geq TL$. However, since the agricultural population will decline rather than increase during the take-off process, we shall not be concerned with this portion of the TPP function in our analysis.

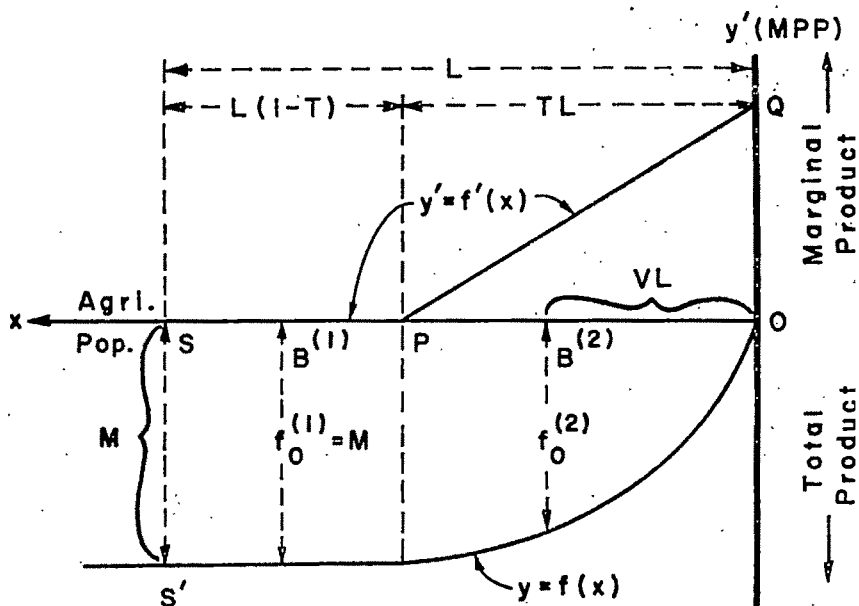


DIAGRAM A.1
($T \leq 1$)

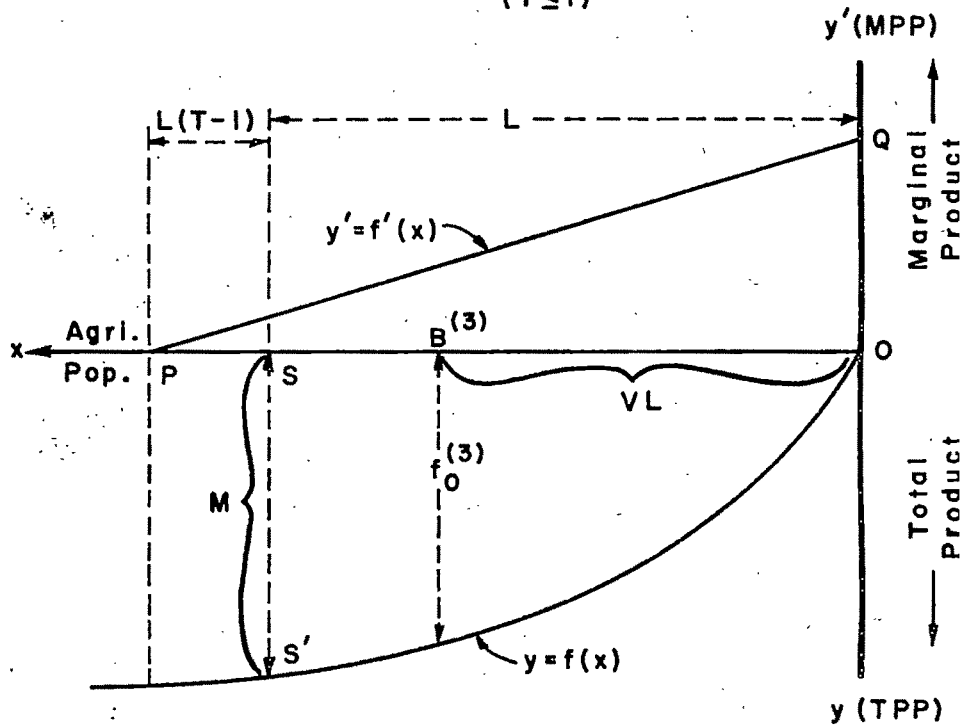


DIAGRAM A.2
($T > 1$)

An increase of agricultural productivity is defined as an upward proportional shift of the entire TPP curve. This can be stated as:

$$(3) \quad \begin{aligned} (a) \quad y &= f^{(1)}(k, x) = \begin{cases} kM[-(x/TL)^2 + 2(x/TL)] & \text{for } x \leq TL \\ & \text{for the case } T \leq 1 \text{ (diagram A.1)} \\ kM & \text{for } x > TL \end{cases} \\ (b) \quad y &= f^{(2)}(k, x) = [kM/(2T-1)][-(x/L)^2 + 2T(x/L)] \\ & \quad \text{for the case } T > 1 \text{ (diagram A.2)} \end{aligned}$$

In other words, after an increase of agricultural productivity has taken place, the new TPP function is a k -multiple of the functions in (2). The constant $k \geq 1$ will be referred to as the "productivity coefficient" because it measures the degree of increase of agricultural productivity. (The choice of notation $f^{(3)}(k, x)$ in (3b) is to facilitate later exposition).

From (2) and (3), the MPP functions can be derived:

$$(4) \quad \begin{aligned} (a) \quad y' &= \begin{cases} [2kM/(TL)^2](-x + TL) & \text{for } x \leq TL \\ & \text{for the case } T \leq 1 \text{ (diagram A.1)} \\ 0 & \text{for } x > TL \end{cases} \\ (b) \quad y' &= [2kM/(2T-1)L^2](-x + TL) \\ & \quad \text{for the case } T > 1 \text{ (diagram A.2)} \end{aligned}$$

II. Total Output and the Institutional Wage at the Break-Out Point

At the break-out point, a part of the initial population, L , may have already been allocated to the industrial sector. Let the agricultural population at the break-out point be VL where $0 \leq V \leq 1$ is the fraction of L in agriculture at that time. The break-out point is indicated by the points $B^{(i)}$ ($i=1, 2, 3$) in diagrams A.1 and A.2. These notations are chosen to distinguish three possible cases:

Case one: $V \geq T$ for $T \leq 1$ (represented by point $B^{(1)}$ in diagram A.1)

Case two: $V < T$ for $T \leq 1$ (represented by point $B^{(2)}$ in diagram A.1)

Case three: $V < T$ for $T > 1$ (represented by point $B^{(3)}$ in diagram A.2)

These cases will be indexed by $i=1, 2, 3$ throughout this appendix. (For case one, the MPP = 0; for cases two and three the MPP is positive.)

Denote the total agricultural output at the break-out point by $f_0^{(i)}$ ($i=1, 2, 3$). The values for $f_0^{(i)}$ can be computed from (3):

$$(5) \quad \begin{aligned} (a) \quad f_0^{(1)} &= f^{(1)}(k=1, x=VL) = M & (\text{for } i=1 \text{ in diagram A.1}) \\ (b) \quad f_0^{(2)} &= f^{(1)}(k=1, x=VL) = [MV/T^2](-V + 2T) \\ & \quad (\text{for } i=2 \text{ in diagram A.1}) \\ (c) \quad f_0^{(3)} &= f^{(2)}(k=1, x=VL) = [MV(2T-1)](-V + 2T) \\ & \quad (\text{for } i=3 \text{ in diagram A.2}) \end{aligned}$$

Let the institutional wage rate be denoted by $W^{(i)}$ ($i=1, 2, 3$). The value

of $W^{(i)}$ is determined by the requirement that the total agricultural output $f_0^{(i)}$ at the break-out point be just adequate to provide for:

- (1) consumption of the agricultural population (VL) at the wage rate $W^{(i)}$;
- (2) consumption of the industrial labor force $[(1-V)L]$ at the wage rate, $W^{(i)}$;
- (3) consumption of the landlord and other uses proportional to total agricultural output assumed to be a fraction, $1-\theta$, of $f_0^{(i)}$;
- (4) demand for agricultural product as industrial raw materials and other requirements assumed to be proportional to the industrial labor force $[(1-V)L]$.²⁵

This can be written as:

$$(6) \quad f_0^{(i)} = W^{(i)}VL + W^{(i)}(1-V)L + (1-\theta)f_0^{(i)} + dW^{(i)}(1-V)L$$

(The parameter d is the "input coefficient," i.e., the amount of agricultural product used as industrial raw materials per industrial worker employed in the industrial sector, and is measured in terms of wage units.)

From (6) the institutional wage can be determined as:

$$(7) \quad W^{(i)} = (\theta/RL)f_0^{(i)} \quad \text{for } i = 1, 2, 3$$

where

$$(8) \quad R = 1 + d - dV.$$

An explicit expression of $W^{(i)}$, defined in terms of the parameters M , L , θ , V , T , d (so far introduced in our system), can be obtained from (5) and (7):

$$\begin{aligned} (9) \quad (a) \quad & W^{(1)} = \theta M/RL \\ (b) \quad & W^{(2)} = \theta MV(-V + 2T)/RLT^2 \\ (c) \quad & W^{(3)} = \theta MV(-V + 2T)/RL(2T - 1) \end{aligned}$$

III. *Balanced Agricultural Labor Force (BALF) and Commercialized Agricultural Labor Force (CALF)*

Let the size of the agricultural labor force at the shortage (commercialization) point (see Section I) be called balanced (commercialized) agricultural labor force, i.e., BALF (CALF). We want to determine BALF and CALF as a function of k . Suppose there is a 100s per cent increase of total population in the agricultural sector after the break-out point. The total population increases from L to $(1+s)L$. If x is the size of the agricultural population, the industrial population is $L(1+s)-x$. For this distribution of the total population between the two sectors, the demand for agricultural

²⁵ Please note that in the text we initially introduce a simplified version of our model for which (3) and (4) are not taken into consideration, i.e., d is assumed to be equal to 0 and θ equal to 1. Under these circumstances all other results in this appendix, which reflect the complete model, could be appropriately simplified. In like fashion, of course, we initially abstract from population growth in the text, i.e., we assume $s=0$. The interested reader may verify the results presented in the text by letting $s=d=(1-\theta)=0$.

output contains the following components [when the same behavioristic assumptions, (1)–(4), identified in the last section, obtain]:

- (10) (a) landlord consumption $A^{(i)}(x) = (1 - \theta)f^{(i)}(k, x)$
 (b) farm labor consumption $B^{(i)}(x) = W^{(i)}x$
 (c) industrial raw materials $C^{(i)}(x) = dW^{(i)}[L(1 + s) - x]$
 (d) industrial labor consumption $D^{(i)}(x) = W^{(i)}[L(1 + s) - x]$

where $W^{(i)}$ is defined in (7) or (9) and $f^{(i)}(k, x)$ is defined in (3). [Notice that, for $i = 1, 2$, $f^{(i)}(k, x)$ are both defined by (2a)]. Since the supply of agricultural output equals demand, then

$$(11) \quad f^{(i)}(k, x) = A^{(i)}(x) + B^{(i)}(x) + C^{(i)}(x) + D^{(i)}(x)$$

The solution for x in (11) is the balanced agricultural labor force (BALF). This is just an alternative way of saying that BALF is determined by the requirement that the average agricultural surplus (AAS) should equal the institutional wage $W^{(i)}$ which is the expression we have used in the text. TAS (total agricultural surplus) and AAS (average agricultural surplus) are defined as:

$$\begin{aligned} \text{TAS} &= f^{(i)}(k, x) - A^{(i)}(x) - B^{(i)}(x) - C^{(i)}(x) \\ \text{AAS} &= \text{TAS} / [L(1 + s) - x] \end{aligned}$$

Equation (11) can also be obtained by equating AAS with $W^{(i)}$.

To solve for x in (11), let U^* be BALF expressed as a fraction of the total population, i.e., $\text{BALF} = U^*L(1 + s)$. Substituting:

$$(12) \quad x = U^*L(1 + s)$$

in (11) above, the value of U^* can be determined. In other words, it is the fraction, U^* , rather than the absolute amount of BALF, that will be determined. Substituting (7) and (12) in (11), we have:

$$(13) \quad f^{(i)}(k, x) / f_0^{(i)}(1 + s) R^* / R$$

where

$$(14) \quad R^* = 1 + d - dU^*$$

and where the left-hand side can be computed from (3), (5) and (12). Equation (13) then becomes:

$$\begin{aligned} (15) \quad (a) \quad & (kR/T^2)[- (U^*(1 + s))^2 + 2U^*T(1 + s)] - (1 + s)(1 + d) \\ & + dU^*(1 + s) = 0 \quad \text{for } i = 1 \\ (b) \quad & (ZR/T^2)[- (U^*(1 + s))^2 + 2U^*T(1 + s)] - (1 + s)(1 + d) \\ & + dU^*(1 + s) = 0, \quad \text{for } i = 2, 3 \end{aligned}$$

where, for (15b),

$$(16) \quad Z = kT^2/V(-V + 2T)$$

These equations define U^* as a function of k , the productivity coefficient. Letting this function, in its explicit form, be denoted by $U^* = U^*(k)$, and noticing that Z takes the place of k in (15b), we have, after simplification,

$$(17) \quad \begin{aligned} (a) \quad U^* &= U^*(k) = \frac{T}{2kR(1+s)} [2kR + dT \\ &\quad - \sqrt{(2kR + dT)^2 - 4kR(1+s)(1+d)}], \quad \text{for } i = 1 \\ (b) \quad U^* &= U^*(Z), \quad \text{for } i = 2, 3 \end{aligned}$$

To compute the commercialized agricultural labor force (CALF), first set MPP [in (4)] equal to the institutional wage $W^{(i)}$ in (9):

$$(18) \quad \begin{aligned} (a) \quad W^{(1)} &= [2kM/(TL)^2](-x + TL), & \text{for } i = 1 \\ (b) \quad W^{(2)} &= [2kM/(TL)^2](-x + TL), & \text{for } i = 2 \\ (c) \quad W^{(3)} &= [2kM/(2T - 1)L^2](-x + TL), & \text{for } i = 3 \end{aligned}$$

The solution of x in (18) gives us the CALF. Denoting CALF by $V^*(1+s)L$, (i.e., V^* is the fraction of total population which is CALF), the expression:

$$(19) \quad x = V^*(1+s)L$$

can be substituted in (18) in order to solve for V^* as a function $V^*(k)$ of k . After substituting (19) and (9) in (18), we derive:

$$(20) \quad \begin{aligned} (a) \quad V^* &= V^*(k) = [T/(1+s)](1 - T\theta/2kR) & \text{for } i = 1 \\ (b) \quad V^* &= V^*(Z) & \text{for } i = 2, 3 \end{aligned}$$

where Z in (20b) is defined as in (16).

IV. *Turning-Point Productivity Coefficient ($k^{(i)}$) and Turning-Point Agricultural Labor Force (TALF)*

The turning point productivity coefficient $k^{(i)}$ is that level of productivity coefficient which equates $U^*(k)$, (17), and $V^*(k)$, (20). Solving for k by setting $U^*(k) = V^*(k)$, we have:

$$(21) \quad \begin{aligned} (a) \quad k^{(1)} &= (1/2R)[(1+s)(1+d) - dT \\ &\quad + \sqrt{(dT - (1+s)(1+d))^2 + (\theta + 2d)T^2\theta}], \quad \text{for } i = 1 \\ (b) \quad k^{(i)} &= [V(-V + 2T)/T^2]k^{(1)} & \text{for } i = 2, 3 \end{aligned}$$

expressing $k^{(i)}$ as a function of the parameters, V , s , d , T , θ . The turning-point agricultural labor force, V_i , (TALF) is the BALF (= CALF) when the productivity coefficient, k , takes on the turning point value (21). Thus substituting (21) in (20), we have:

$$V_i = A + B - \sqrt{(A + B)^2 - 2AB\left(\frac{2d + \theta}{d + \theta}\right)} \quad \text{where}$$

$$\begin{aligned}
 (22) \quad A &= \frac{1+d}{\theta+2d} \\
 B &= \frac{Q(d+\theta)}{\theta+2d} \\
 Q &= \frac{T}{1+s}
 \end{aligned}$$

The value of V_i , which is the same for all three cases ($i=1, 2, 3$), is seen to be a function of the parameters, d, T, s, θ . It should also be noted that in (22), the parameters L (the initial population) and M (the initial total agricultural output) are not involved. The economic significance of this fact is that the absolute size, i.e. the scale, of the economy, measured in terms of L and/or M , is irrelevant to the arguments of this paper.

From (22) we see that V_i is nonnegative. Furthermore, it can be shown that $V_i \leq 1$ if the following condition is satisfied:

$$(23) \quad T \leq \frac{(1-\theta/2)(1+s)}{(1-\theta)}$$

This, as we have pointed out in the course of the empirical discussion of our model in the text, permits all reasonable values of T to be postulated to yield $0 \leq V_i \leq 1$. Assuming (23) is satisfied, it can easily be shown that

$$\frac{\partial V_i}{\partial T} \geq 0 \quad \text{and} \quad \frac{\partial V_i}{\partial s} \leq 0.$$

THE ROLE OF AGRICULTURE IN ECONOMIC DEVELOPMENT

By BRUCE F. JOHNSTON AND JOHN W. MELLOR*

The present article deals with issues that have too often been discussed in terms of the false dichotomy of agricultural vs. industrial development. The approach adopted here is to examine the interrelationships between agricultural and industrial development and to analyze the nature of agriculture's role in the process of economic growth.

Diversity among nations in their physical endowment, cultural heritage, and historical context precludes any universally applicable definition of the role that agriculture should play in the process of economic growth. Nevertheless, certain aspects of agriculture's role appear to have a high degree of generality because of special features that characterize the agricultural sector during the course of development. The nature of agriculture's role is, of course, highly relevant to determining the appropriate "balance" between agriculture and other sectors with respect to (1) direct government investment or aids to investment, (2) budget allocations for publicly supported research and education-extension programs, and (3) the burden of taxation levied on different sectors.

I. Special Characteristics of the Agricultural Sector in the Process of Economic Development

Two important and related features distinguish the agricultural sector in an underdeveloped country and its role in the process of economic growth. First, in virtually all underdeveloped economies agriculture is an existing industry of major proportions, frequently the only existing industry of any consequence. Typically, some 40 to 60 per cent of the national income is produced in agriculture and from 50 to 80 per cent of the labor force is engaged in agricultural production. Although large quantities of resources—chiefly land and labor—are committed to agriculture, they are being used at very low levels of productivity.

*The authors are, respectively, professor and economist, Food Research Institute, Stanford University; and associate professor of agricultural economics, Cornell University. We have received valuable criticism of successive drafts from many persons. We wish to acknowledge particularly suggestions from W. O. Jones, Kazushi Ohkawa, David Bell, W. Arthur Lewis, Richard Easterlin, Roger Gray, Arthur T. Mosher, and Philip M. Raup.

The other significant characteristic is the secular decline which occurs in the relative size of the agricultural sector [6] [39] [45] [27] [26]. The importance of this process of structural transformation and the size of the related capital demands place a great burden on agriculture to provide capital for expansion of other sectors. The economic transformation also has important implications with respect to the changing role of labor and capital and the choice of methods for developing agriculture. ✓

Secular decline of the agricultural sector: the "general transformation model." The two basic factors generally recognized as responsible for the structural transformation of an economy are: (1) an income elasticity of demand for food that is less than 1 and declining, and (2) the possibility of a substantial expansion of agricultural production with a constant or declining farm labor force.

A third factor that has received less attention is probably of considerable importance: by and large modern technology permits the most drastic reduction of costs in manufacturing industry, in power generation, and in long-distance transport. It is within these fields that investments in modern, power-driven machinery and the application of advanced technology lead to early and revolutionary reductions in costs so that price-elasticity and substitution effects reinforce differential income elasticities in changing the pattern of output and consumption. ✓

The relative decline of the agricultural sector will not proceed as rapidly or as far in countries that have a marked comparative advantage in exporting agricultural products. But even countries particularly well suited by their resource endowment to emerge as major agricultural exporters can be expected to witness a substantial reduction in the share of agriculture if they achieve a sizable increase in per capita incomes. Denmark and New Zealand stand out as countries that have benefited greatly from their position as leading agricultural exporters; ✓ even so, less than 20 per cent of their labor is presently engaged in agriculture.¹

The reasons for the secular decline of agriculture and substantial expansion of manufacturing and other components of the nonagricultural sector have not been fully elucidated; but this type of structural transformation of an economy seems to be a necessary condition for cumulative and self-sustaining growth. A mere change in the product-mix

¹ The Danish example is particularly striking. The country is conspicuously lacking in resources other than its excellent agricultural potential. More than 65 per cent of total agricultural output is sold abroad, and despite considerable expansion of nonagricultural exports since the second world war, agriculture still accounts for some 60 per cent of total foreign exchange earnings [18, p. 7] [22, p. 114].

available for consumption, obtainable up to a point entirely by means of international trade, is apparently *not* a sufficient condition.²

The two-sector classical growth model. The implications of the dynamic nature of the growth process have been elaborated most clearly in W. Arthur Lewis' two-sector model, which represents a special case of the "general transformation model" characterized above. Since, in densely populated countries, a considerable proportion of the rural labor force may provide an increment to production less than the requirements for its own subsistence, Lewis assumes in his model that there is a surplus of manpower in agriculture (subsistence sector);³ and that the nonagricultural (capitalist) sector is the dynamic element which absorbs this surplus of manpower.⁴ —

Since the supply of labor available in the traditional sector is assumed to be in effect "unlimited," the transfer of manpower to the capitalist sector is determined by the demand for labor in that sector, which in turn is limited by the rate of capital accumulation. In the capitalist sector it will normally be necessary to pay a wage determined by the average product per man in the traditional sector, plus some margin dictated by transfer frictions, social views of minimum subsistence, trade union pressure, and other institutional forces.

This is, of course, a transitional phase. "When capital catches up with labour supply," as Lewis phrases it, the two-sector model is no longer relevant. However, in the short run, nonfarm job opportunities cannot be created sufficiently rapidly to move ahead of population growth in the countryside. Dovring has called attention to the fact

² Even Viner, who has been critical of using income from the agricultural sector to "subsidize uneconomic urban industry," does not really take issue with this proposition [48, p. 124]. His (reluctant?) concession is phrased in a double negative: "It is not my position that the path to economic progress is not, for many countries and even for most countries, by way of industrialization and urbanization." "The real problem," he continues, "is not agriculture as such or the absence of manufactures as such, but poverty and backwardness, poor agriculture, or poor agriculture and poor manufacturing. The remedy is to remove the basic causes of the poverty and backwardness" [48, p. 71]. Viner later suggests that if the masses of the population in underdeveloped countries were "literate, healthy, and sufficiently well fed . . . all else necessary for rapid economic development would come readily and easily of itself" [48, p. 131]. These factors are obviously important, but it seems highly questionable that shortcomings in literacy, health, and nutrition have been the sole obstacles, or even the major obstacles, to achieving rapid economic growth. Moreover, a static view of comparative advantage is an inadequate basis for determining what is or is not "uneconomic urban industry."

³ For discussion concerning the physical conditions in which such a labor surplus will or will not arise and for empirical support, see [33]. Georgescu-Roegen [12] emphasizes that special institutional arrangements are required to make it possible for certain workers to "receive more than they earn." The most common of these institutional arrangements is the family farm in which the unit of production is also the unit of consumption.

⁴ Strictly speaking, the subsistence and capitalist sectors of the Lewis model do not correspond exactly to agriculture and nonagriculture. The distinguishing feature of the capitalist sector is that labor is employed for wages for profit-making purposes and that substantial quantities of reproducible capital are used [30, p. 8] [29, p. 146].

that the farm labor force frequently does not decline in absolute numbers until fairly late in the process of development; the absorption of surplus labor from agriculture depends not only on the rate of increase of nonagricultural employment but also on the "weight" of the non-agricultural sector in the economy [8].

Lewis' treatment emphasizes the implications of the two-sector model for industrial development, but it also has important implications for agricultural development policy. So long as the conditions of this classical growth-model are relevant, factor proportions and productivities will and should be different in the two sectors and a different calculus is applicable to allocation decisions.

Resource allocation in agriculture. Since there may be discrepancies between private and social benefit or between private and social cost, the relevant concept in agriculture as elsewhere is the social marginal productivity of alternative investment projects [4, pp. 76-96] [9, pp. 56-85]. This concept, or the less sophisticated but often more operational technique of estimating cost-benefit ratios, is reasonably serviceable in appraising large-scale investment projects in the agricultural sector.

There are compelling considerations, however, which suggest that the most practical and economical approach to achieving sizable increases in agricultural productivity and output lies in enhancing the efficiency of the existing agricultural economy through the introduction of modern technology on a broad front. Of particular importance are expenditures for "developmental services" or "unconventional inputs" such as agricultural research, education, and extension that broaden the range of alternative production possibilities available to farm operators and strengthen their capacity to make and execute decisions on the basis of more adequate knowledge of agricultural technology.

Three considerations emphasize the need for a special approach in determining the level of resource allocation to agriculture and for establishing priorities within an agricultural development program. First, it is virtually impossible to quantify the schedule of increase in output or reduction in costs that can be expected as a result of expenditures for developmental services such as agricultural research or extension [1]. Even an *ex post* estimate is difficult, a fact brought out clearly in Griliches' interesting attempt to estimate the returns that can be attributed to the investment of resources in the development of hybrid corn [14].

The second factor is the importance of complementarities among agricultural inputs. It is necessary in designing a rational program of agricultural development to define a "package" of inputs—conventional and unconventional—that will be most efficient in increasing agricultural output.

The third difficulty concerns the need to discriminate between the use of scarce and relatively abundant resources. Investible funds, foreign exchange, and certain forms of entrepreneurial talent are in particularly short supply and are critical for industrial development. In contrast, many of the inputs for agricultural development are relatively abundant. In particular, agricultural labor will continue to have low opportunity cost for some time owing to the slow growth of demand for industrial labor. Use of shadow or accounting prices represents one technique for taking account of the abundance of these resources. However, explicit recognition of the special characteristics of the process of agricultural development is essential for designing a strategy for increasing agricultural output and productivity which will minimize requirements for the scarce resources indispensable for expansion of the capitalist sector.

Historical experience. The proposition that a substantial rate of increase in agricultural production can be achieved largely through the more effective use of resources already committed to the agricultural sector and with only modest requirements for the critical resources of high opportunity cost is essentially an empirical generalization. Considerable support for the proposition is provided by the experience of countries in North America and Western Europe that have been successful in increasing agricultural productivity.⁵ More pertinent, however, is the historical experience of Japan and Taiwan.

Labor productivity in Japanese agriculture approximately doubled over a span of 30 years, comparing farm output and labor inputs during the years 1881-90 with the decade 1911-20. The comparable increase in Taiwan appears to have been even larger—something like 130 to 160 per cent over the 30-year span between 1901-10 and 1931-40 [23, pp. 499-500] [22, pp. 23, 41, 78, 91]. A threefold expansion of sugar yields and a nearly twelvefold increase of output was a conspicuous element in the increase registered in Taiwan. This particularly rapid progress in sugar was favored by the spectacular world progress in breeding higher yielding varieties of cane during the first three decades of the present century and the fact that exportation to Japan provided an outlet for the rapidly expanding production. Similarly, the fivefold increase in cocoon production and sevenfold increase in output of raw silk in Japan was considerably more rapid than the over-all

⁵ Studies of the growth of agricultural productivity in the United States have underscored the importance of unconventional inputs and suggest that technological change has been about as important as the quantitative increase in conventional inputs in bringing about increased production [43]. Technical innovations were probably even more important in the impressive growth of agricultural productivity in Denmark; the average annual (compound) rate of increase between the 1880's and the decade of the 1930's was about 2 per cent [22, pp. 102-4].

growth of agricultural output. Technological progress resulting from research aimed at heavier yields of mulberry leaves, selection and breeding of superior races of silkworms, and improvements in practices ranging from the methods of feeding silkworms to the reeling of silk from the cocoons was the decisive factor in the rapid growth in the sericulture industry. Here again, however, the availability of an expanding export market was a necessary condition for the rapid growth of output that was attained.

It is also clear that technological progress was the decisive factor responsible for the increase in productivity and output of rice and other basic food crops that accounted for the bulk of agricultural production in Japan and Taiwan. The three key elements were: (1) agricultural research leading to the development and selection of higher-yielding varieties; (2) increased application of fertilizers; and (3) activities that facilitated wide use of the most productive plant varieties and of improved farm practices. The high degree of complementarity among various agricultural inputs is clearly evident in the agricultural advance achieved in these two countries. The work of the plant-breeders was largely directed at developing varieties characterized by a strong response to increased applications of fertilizer; the gains achieved were the result of the joint advance in improving plant varieties and in raising the level of soil fertility by heavier application of chemical fertilizers. Changes in cultural practices also played a necessary part in realizing the full potential of new varieties combined with heavier fertilization.

Increase of crop area, largely through extending the area of double-cropping, and expansion of irrigation were more important in Taiwan than in Japan during the periods considered; development in those directions was already fairly advanced in Japan by the 1880's. Thus it appears that agricultural investment was a somewhat more important factor in Taiwan than in Japan, but to a large extent it was direct, non-monetary investment [22, pp. 77-81].

The expenditures in Japan and Taiwan for agricultural research, extension-type activities, and other developmental services were very modest in relation to the large increments in output obtained.

II. *Agriculture's Contributions to Economic Development*

The most important ways in which increased agricultural output and productivity contribute to over-all economic growth can be summarized in five propositions: (1) Economic development is characterized by a substantial increase in the demand for agricultural products, and failure to expand food supplies in pace with the growth of demand can seriously impede economic growth. (2) Expansion of exports of

agricultural products may be one of the most promising means of increasing income and foreign exchange earnings, particularly in the earlier stages of development. (3) The labor force for manufacturing and other expanding sectors of the economy must be drawn mainly from agriculture. (4) Agriculture, as the dominant sector of an underdeveloped economy, can and should make a net contribution to the capital required for overhead investment and expansion of secondary industry. (5) Rising net cash incomes of the farm population may be important as a stimulus to industrial expansion.

1. *Providing increased food supplies.* Apart from autonomous changes in demand, presumably of limited importance, the annual rate of increase in demand for food is given by $D = p + \eta g$, where p and g are the rate of growth of population and per capita income and η is the income elasticity of demand for agricultural products [37].

Growth of demand for food is of major economic significance in an underdeveloped country for several reasons. First, high rates of population growth of $1\frac{1}{2}$ to 3 per cent now characterize most of the world's underdeveloped nations, so that growth of demand from this factor alone is substantial. As a result of international borrowing of knowledge and techniques in the public health field and the availability of such powerful weapons as DDT, the sulpha drugs, and penicillin, the decline in death rates is frequently sharp. This, in combination with the slow decline in birth rates, has resulted in rates of natural increase substantially higher than those that characterized the presently developed countries during their "population explosion."⁶ Moreover, there is now only a weak relationship between the factors mainly responsible for the rise in the rate of natural increase and the factors determining the growth of a nation's income.

Secondly, the income elasticity of demand for food in underdeveloped countries is considerably higher than in high-income nations—probably on the order of .6 or higher in the low-income countries vs. .2 or .3 in Western Europe, the United States, and Canada.⁷ Hence, a given rate of increase in per capita income has a considerably stronger

⁶ The rapid population growth now characteristic of underdeveloped countries reinforces the view stated earlier that structural transformation of an economy is a necessary condition for cumulative economic growth and substantial increase of per capita incomes. Such a transformation, with the accompanying urbanization, increase of incomes, spread of education, and changes in attitudes and incentives, is a precondition for reduction of birth rates to levels compatible with a sharply lowered death rate. It may be desirable in some countries to reinforce the indirect influence of economic and social transformation by direct measures to encourage reduction of birth rates; but there is no evidence to suggest that direct measures alone would be sufficient.

⁷ These approximations relate to income elasticity with respect to food expenditure measured at the farm level, the concept most relevant to assessing the growth of demand for agricultural products. We have reviewed some of the evidence bearing on income elasticities in developed and underdeveloped countries in [21, p. 339].

impact on the demand for agricultural products than in economically advanced countries.

The increase in farm output in Japan between the 1880's and 1911-20, which seems to have been of about the same magnitude as the growth of demand during that period, corresponded to an annual rate of increase in demand of approximately 2 per cent. With current rates of population growth and a modest rise in per capita incomes, the annual rate of increase of demand for food in a developing economy can easily exceed 3 per cent, a formidable challenge for the agriculture of an underdeveloped country. Moreover, as a result of the expansion of population in cities and in mining and industrial centers dependent upon purchased food, the growth of demand for marketed supplies is a good deal more rapid than the over-all rate of increase. Thus there are additional problems in developing transportation links and marketing facilities in order to satisfy the requirements of the nonagricultural population. ✓

If food supplies fail to expand in pace with the growth of demand the result is likely to be a substantial rise in food prices leading to political discontent and pressure on wage rates with consequent adverse effects on industrial profits, investment, and economic growth. There is scant evidence concerning the price elasticity of demand for food in underdeveloped countries. At least in the case of an increase in prices as a result of demand outstripping supply, there is a strong presumption that the price elasticity for "all food" is extremely low, probably lower than in economically advanced countries. Cheap starchy staple foods—cereals and root crops—provide something like 60 to 85 per cent of the total calorie intake in low-income countries, so there is relatively limited scope for offsetting a rise in food prices by shifting from expensive to less costly foods; and the pressure to resist a reduction in calorie intake is strong.

The inflationary impact of a given percentage increase in food prices is much more severe in an underdeveloped country than in a high-income economy. This is a simple consequence of the dominant position of food as a wage good in lower-income countries where 50 to 60 per cent of total consumption expenditure is devoted to food compared with 20 to 30 per cent in developed economies.

Owing to the severe economic and political repercussions of a substantial rise in food prices, domestic shortages are likely to be offset by expanded food imports, provided that foreign exchange or credits are available.⁸ For some countries that are in a favorable position

⁸ Some underdeveloped countries have reacted to the social and economic problems resulting from food shortages and their inflationary consequences by instituting compulsory food collection, price controls, and rationing. It is easy to appreciate that considerations of social equity would lead to such measures in a low-income country; but from the

with respect to foreign exchange earnings this may be a satisfactory solution. But foreign exchange is usually in short supply and urgently required for imports of machinery and other requisites for industrial development that cannot be produced domestically. There is no simple or general answer to this question of import substitution that Chenery has described as "the most important and most difficult aspect of development programming . . ." [5, p. 67]. In view of the potential that exists for increasing agricultural productivity it is likely to be advantageous to obtain the additional food supplies by increased domestic output rather than by relying on expansion of exports to finance enlarged food imports.⁹ In any event, a static view of comparative costs may be misleading. The demand for imports of machinery and other items can be expected to increase as development proceeds, so the existing exchange rate is not likely to reflect the future demand for and supply of foreign exchange [5, p. 67].

The foregoing discussion has stressed the severe penalties attached to failure to achieve the "required" increase in output. This notion of a "required" increase in output should not be pushed too far; the price elasticity of demand for food is low but not zero and there is normally the possibility of adjusting supplies via imports. Nevertheless, it is noteworthy that the demand for food is a derived demand determined essentially by the growth of population and of per capita incomes; and this characteristic of the demand for food cuts in both directions. Not only does it mean severe penalties for failure to expand food supplies in pace with the growth of demand, but it also implies that the returns on investment in expansion of food crops for domestic consumption fall off sharply if food supplies increase more rapidly than demand. There is thus a significant difference between the domestic demand for food products and the more expansible demand for agricultural exports

standpoint of economic development the effects of an attempt to maintain such food distribution controls on a continuing basis are almost entirely unfavorable. Such programs tie up scarce administrative talent in a program of uncertain value that is usually ineffective as well; and they impede the growth of a market-oriented agriculture. Much higher returns are obtainable from a well-conceived program of agricultural development to expand total output rather than controlling its distribution. For an interesting discussion of experience in Pakistan see [46, pp. 121-26]. If short-run instability of food prices resulting from fluctuations in farm output is a real problem, there may be justification for establishing a food reserve, especially if U.S. surplus stocks can be drawn upon to provide the initial stock.

⁹ This is, of course, merely a presumption, and it does not alter the fact that it is important to maintain price competition between domestic and imported foodstuffs, nor the fact that it is advantageous to import foodstuffs that cannot be produced efficiently at home, wheat imports in tropical regions being an important example. The availability of large quantities of U.S. agricultural surpluses on favorable terms has the effect of somewhat reducing the importance of measures to increase agricultural productivity and output in a developing country; but there remains the question whether such windfall supplies will be available on a continuing basis in quantities sufficient to satisfy a rapidly growing demand.

(of a particular country) and for the miscellany of goods and services produced by "nonagriculture."

2. *Enlarged agricultural exports.* Expansion of agricultural exports is likely to be one of the most promising means of increasing incomes and augmenting foreign exchange earnings in a country stepping up its development efforts. A profitable export crop can frequently be added to an existing cropping system; the capital requirements for such innovations are often moderate and largely dependent on direct, non-monetary investment by farmers.

Development of production of export crops has a further advantage in catering to an existing market; and an individual country that accounts for only a small fraction of world exports faces a fairly elastic demand schedule. In view of the urgent need for enlarged foreign exchange earnings and the lack of alternative opportunities, substantial expansion of agricultural export production is frequently a rational policy even though the world supply-demand situation for a commodity is unfavorable.

There are, of course, disadvantages to heavy reliance on agricultural exports. And simultaneous efforts to expand exports of certain agricultural commodities in a number of underdeveloped countries involve the risk of substantial price declines, especially if the relevant price and income elasticities are low.

A longer-run goal is diversification which will lessen the vulnerability of an economy that depends heavily on export proceeds from one or a few crops. One of the rewards of the structural transformation associated with economic growth is the greater flexibility of a diversified economy. Of much greater immediate importance, however, is the fact that for most of the underdeveloped countries the introduction or expanded production of agricultural export crops can and should play a strategic role in providing enlarged supplies of foreign exchange.¹⁰

3. *Transfer of manpower from agriculture to nonagricultural sectors.* To the extent that the Lewis two-sector model with its assumption of a perfectly elastic supply of labor is applicable, it follows that manpower for manufacturing and other rapidly expanding sectors can be drawn easily from agriculture. On the other hand, if the rural population is sparse and there is a good potential for expanding output of

¹⁰ As with so many of the policy issues that face a developing country there is no simple answer because intelligent decisions require a balancing of contradictory considerations. Agricultural exports are vulnerable to sizable price fluctuations, and there is a possibility of deterioration in a country's terms of trade if it is dependent on crops which experience a secular decline in price. It has been elegantly demonstrated that under certain assumptions expansion of exports can lead to "immiserizing growth," but we share Nurkse's skepticism concerning the concept of "output elasticity of supply" on which the demonstrations rest and agree with his conclusion that the pessimistic appraisals of the effects of trade really amount to demonstrating that an economy incapable of adapting to changed circumstances is at a disadvantage [36, pp. 58-59]. Much more important than a

profitable cash crops, it may be difficult to obtain labor for a rapidly expanding capitalist sector. In any event, the bulk of the labor for the expanding sectors must be drawn from agriculture in the earlier stages of development simply because there is almost no other source. The experience of Japan, where the conditions of the two-sector model were approximated, seems to indicate that the rate of investment was the limiting factor and that transfer of labor to industry was not a major problem [22, pp. 51-73]. In view of the potential that exists for increasing agricultural output per man, it is to be expected that labor-supply problems in manufacturing and other growing industries will not be serious provided that intelligent and vigorous efforts are made to enhance farm productivity.¹¹

4. *Agriculture's contributions to capital formation.* The secular decline of the agricultural sector and the structural transformation of an economy that characterize the dynamics of growth underscore the importance and difficulty of the problem of capital accumulation in an underdeveloped country. This is probably the most significant implication of Lewis' two-sector model in which the rate of capital formation determines the rate at which employment can be expanded in the capitalist, high-wage sector of the economy; and the rate of expansion of employment in the capitalist sector relative to the growth of the total labor force determines how soon the surplus of rural labor will be reduced to a point where wage levels are no longer depressed by the low level of productivity and earnings in the subsistence sector.¹²

✓ An underdeveloped country that is making determined efforts to achieve economic progress faces formidable requirements for capital to finance the creation and expansion of manufacturing and mining enterprises, for overhead investment in transportation and utilities, and in the revenue needed for recurrent expenditure for expansion of education and developmental services. These requirements are certain to outstrip the supply of funds available except in those countries which have large earnings from petroleum or mineral exports or particularly favorable access to foreign capital. (The sheer size of the agricultural sector

theoretical possibility of immiserizing growth is the fact that for the predominantly agricultural economy of an underdeveloped country, expansion of export crops is likely to offer a practical and economic means by which incomes and foreign exchange earnings can be increased. The gains are likely to be especially significant in relation to development in those instances in which the enlarged production of export crops depends primarily on the use of relatively abundant resources of low opportunity cost.

¹¹ Fleming has asserted that the ease with which labor can be transferred from agriculture to nonagricultural industry "has frequently been exaggerated" [10, p. 254]; but he largely ignores the significant potential that exists for raising labor productivity in agriculture.

¹² The difference between the rate of growth of total and nonagricultural employment, which Döring has termed the "coefficient of differential growth," is a useful measure for comparing the speed of sector changes [8].

as the only major existing industry points to its importance as a source of capital for over-all economic growth. This presumption is particularly strong during the early stages of economic growth inasmuch as reinvestment of profits, historically the major source of capital accumulation, cannot be significant so long as the capitalist sector remains a small segment of the economy.

Since there is scope for raising productivity in agriculture by means that require only moderate capital outlays, it is possible for the agricultural sector to make a net contribution to the capital requirements for infrastructure and for industrial expansion without reducing the low levels of consumption characteristic of the farm population in an underdeveloped country. An increase in agricultural productivity implies some combination of reduced inputs, reduced agricultural prices, or increased farm receipts. Labor, being the abundant input in agriculture, is the principal input that will be reduced, and attention has already been given to agriculture's role as a source of manpower. Implicit in the earlier discussion of the need to expand agricultural production in pace with the growth of demand for food was the important proposition that stable or reduced agricultural prices can facilitate capital accumulation by preventing deterioration or even improving the terms of trade on which the industrial sector obtains food and other agricultural products.

Before considering the possibilities of securing a flow of capital out of agriculture, mention should be made of the ways in which the resource requirements of the agricultural sector can be minimized. The approach to agricultural development considered in Section III is one which minimizes requirements for scarce resources of high opportunity cost and which emphasizes the possibility of enhancing the productivity of the resources already committed to agriculture. It is also desirable for the capital requirements for agricultural expansion, including the increased outlays for fertilizers that are likely to be so important in this phase of agricultural development, to be financed as much as possible out of increased farm receipts that may accrue with the increase of productivity and output. Possibilities also exist for levying school fees, charges for land registration, and other fees that cover all or part of the cost of services provided for the farm population. But for many of the developmental services important to agriculture, it is *not* desirable to link services rendered with a charge to defray the cost. This is partly because individual farmers may not be able or willing to pay for such services, but more important is the fact that social returns to expenditures for research and extension to raise agricultural productivity may be much larger than the private benefits that can be appropriated by individual producers.

Japan is probably the clearest example of a country where agricul-

ture contributed significantly to the financing of development. It was noted earlier that the impressive increase in farm output and productivity in Japan between 1881-90 and 1911-20 required only small capital outlays and but moderate increases in other inputs. Consumption levels of the farm population increased much less than the rise in productivity in agriculture, so that a substantial fraction of the increment in product in agriculture could be used to finance capital formation in the capitalist sector of the economy.

Since heavy taxes on agriculture were the principal device used to siphon off a part of this increase in productivity, it is possible to obtain some notion of the magnitude of this contribution in relation to total investment. Estimates of the division of the tax burden between agriculture and nonagriculture by Seiji Tsunematsu indicate that agriculture's share was some 80 per cent as late as 1893-97 and was still about 50 per cent during the years 1913-17 [22, pp. 53-57] [40, pp. 446-48].

Tax revenues from agriculture thus provided a large part of the funds that the Japanese government used in fostering development by constructing "model factories," by subsidizing the creation of a merchant marine and shipbuilding industry, and by strategic investments in overhead capital such as railroads, education, and research.

Rosovsky's estimates of investment in Japan throw light on the importance of government's role in investment. Even with allowance for the fact that his figures understate private investment, the data indicate that government investment, excluding military investment, exceeded 50 per cent of total investment throughout the period 1895-1910 [42, pp. 354-57].

This heavy reliance on agricultural taxation appears to have been a conscious policy. The eminent economic historian Takao Tsuchiya has interpreted the policy in these terms; "The urgent necessity for protecting and fostering other industries compelled the government to impose a heavy land tax on the agricultural population to obtain the wherewithal to carry out industrial development programs" [35, p. 4].

Political and institutional problems frequently make it difficult to translate the increased potential for saving and capital accumulation, made possible by increased agricultural productivity, into an actual increase in investment. Recent experience in India and Pakistan, for example, gives rise to doubts as to whether capital accumulation and economic growth will proceed at a "satisfactory" pace. Despite the stress that has been placed on promoting economic development, agriculture's contribution to investment and revenue requirements for government expenditure for current services seems to have declined; or at least there is evidence that agriculture's relative contribution to tax revenues has declined appreciably. Wald reports that whereas land

revenues in India provided over 20 per cent of total tax revenue in 1939 they accounted for only 9 per cent of the tax receipts of India's central and state and provincial government in 1954 and only 5 per cent of total tax receipts in Pakistan in 1952 [49, pp. 44n, 61-63].

The political difficulties in taxing the agricultural sector are often formidable, but it seems likely that insufficient recognition of the strategic role that agriculture can and should play in contributing to the capital requirements of economic development has been a factor in the failure to realize the potential for a higher rate of capital formation. Frequently, simple inertia and weaknesses in the tax system have been major factors: government revenues from land in the seven Part A states in India increased only 50 per cent between 1938/39 and 1951/52 whereas the index of wholesale prices of major agricultural commodities increased 550 per cent. On the other hand, inertia has contributed to high tax yields in instances in which tax revenues have been geared to rising world prices. The yield from the land tax in Burma declined from 40 per cent of total government revenue prewar to 5 per cent in 1952, but this was offset by the profits of the state agricultural marketing board which provided some 40 per cent of total government revenue [49, pp. 54, 63]. The influence of the postwar rise in commodity prices was a particularly significant element in the large take of export taxes and marketing board surpluses in Ghana, Uganda, and other African countries.¹⁸

✓The conclusion suggested so strongly by both theoretical considerations and historical experience is that in underdeveloped countries, where agriculture accounts for some 40 to 60 per cent of the total national income, the transition from a level of saving and investment that spells stagnation to one permitting a tolerable rate of economic growth cannot be achieved unless agriculture makes a significant net contribution to capital formation in the expanding sectors. If communist countries have an advantage in securing rapid economic growth, it would seem to lie chiefly in their ability to ride roughshod over political opposition and divert a maximum amount of current output into capital accumulation. And agriculture has been a prime target in squeezing out a maximum amount of surplus for investment. In the Soviet Union compulsory collection of grain at artificially low prices

¹⁸ This is not intended as a blanket indorsement of export taxes and marketing board surpluses as devices for mobilizing funds for development. Nurkse and others have rightly emphasized that excessively heavy taxation can "kill the goose that lays the golden eggs," which seems to be an accurate description of Argentina's policies during the decade following the second world war. It is also true that arguments for mobilizing funds by taxing the agricultural sector have a hollow ring if they encourage spendthrift government policies and expenditure on "public consumption goods," which Walker and Ehrlich believe to have been true in Uganda [50].

was used to siphon off the increment in output originating in agriculture and to facilitate the forced-march development of industry.¹⁴ The rural communes in Communist China appear to be a device aimed not only at extracting the maximum possible surplus of capital from the countryside but a maximum labor effort as well.¹⁵ ✓

Societies which value individual freedom and which limit the arbitrary power of government are unable and unwilling to apply the sort of coercion and drastic reorganization of rural communities involved in the collectivization drive in the Soviet Union and in the creation of the Chinese communes. But this should not blind us to the hard fact that an essential element of economic growth is, in Lewis' phrase, "the process by which a community is converted from being a 5 per cent to a 12 per cent saver . . ." [31, p. 226]. In the earlier phases of development it is well-nigh certain that agriculture must play a major role in the process.

5. *Increased rural net cash income as a stimulus to industrialization.* One of the simplifying assumptions of the two-sector model is that expansion of the capitalist sector is limited only by shortage of capital. Given this assumption, an increase in rural net cash income is not a stimulus to industrialization but an obstacle to expansion of the capitalist sector.¹⁶

It is true, of course, that investment decisions may in fact be influenced not only by the availability of capital but also by demand conditions and estimates of the future profitability of additions to capacity. Nurkse has been especially emphatic in stressing the importance of *opportunities* for profitable investment as a strategic factor influencing the rate of capital formation, and Lewis himself emphasized in his report on industrialization in the Gold Coast that increased rural purchasing power is a valuable stimulus to industrial development [32]. Nurkse has given this concise statement of the problem:

The trouble is this: there is not a sufficient market for manufactured goods in a country where peasants, farm laborers and their families, comprising typically two-thirds to four-fifths of the population, are too

¹⁴ For a brief description of Soviet experience and references to fuller treatments see [23, pp. 508-10].

¹⁵ Recent reports indicate that the rural communes have encountered considerable difficulty in maintaining production efficiency because of some of the special problems of large-scale management in agriculture that are noted in Section III. See the summary of recent discussion of agricultural policy in the *People's Daily* and *Red Flag* by Jacques Jacquet-Francillon in *Le Figaro*, March 15, 1961, p. 5.

¹⁶ Lewis states that: "Anything which raises the productivity of the subsistence sector (average product per person) will raise real wages in the capitalist sector, and will therefore reduce the capitalist surplus and the rate of capital accumulation, unless it at the same time more than correspondingly moves the terms of trade against the subsistence sector [29, p. 172].

poor to buy any factory products, or anything in addition to the little they already buy. There is a lack of real purchasing power, reflecting the low productivity in agriculture [36, pp. 41-42].

There is clearly a conflict between emphasis on agriculture's essential contribution to the capital requirements for over-all development and emphasis on increased farm purchasing power as a stimulus to industrialization. Nor is there any easy reconciliation of the conflict. The size of the market is particularly pertinent to investment decisions in industries characterized by economies of scale so that a fairly high volume of demand is needed to justify construction of a modern factory. But substitution of domestic output for imported manufactured goods often provides a significant addition to demand that does not depend upon an increase in consumer purchasing power. Furthermore, if capital requirements for developing infrastructure and capital-goods or export industries are large relative to the amount of capital that can be mobilized, insufficient consumer demand is unlikely to limit the rate of investment.¹⁷ Political considerations, of course, also play an important role in this determination. Although this is another of the policy issues for which no general answer is possible, it will normally be appropriate to emphasize the capital contribution from agriculture in early stages of the structural transformation. ✓

III. *Resource Requirements and Priorities for Agricultural Development*

It has been argued that a substantial rate of increase in agricultural production can be achieved largely through the more effective use of resources already in the agricultural sector and with only modest demands upon the scarce resources of high opportunity cost which are indispensable for industrial development.

The design and implementation of a rational program of agricultural development, however, is by no means a simple task. Although the experience of Japan, Taiwan, Denmark and other countries that have made notable progress in agriculture throws light on the type of ap-

¹⁷ It would appear that this was the situation that prevailed in Japan during the decades prior to about 1920. A provisional interpretation of developments in Japan during the years 1920-32 suggests that a low level of consumer purchasing power may have been more important than a lack of investible funds in limiting the rate of expansion of the capitalist sector. Even so, deflationary policies and an overvalued exchange rate appear to have been the principal factors responsible for the retardation in the expansion of the capitalist sector in Japan during this period [22, pp. 60-74]. It seems abundantly clear that Japan's remarkably rapid rate of economic growth since the second world war has been stimulated by social changes that led to increased purchasing power among the farm population and industrial workers; but it is also true that by that time the existence of a sizable industrial base and a high rate of profits provided the funds which permitted an extremely high rate of investment.

proach that is likely to yield high returns, their experience can only be suggestive. Variations in soil, climate, and in human resources are of such importance that many aspects of agricultural development are specific to a particular country, region, district, and, ultimately, to an individual farm. Changes over time in the availability and relative prices of productive factors are also of great importance in influencing decisions concerning the choice of techniques of production and the combination of farm enterprises.

Agricultural development policies. Emphasis is given here to a particular type of strategy for raising the productivity of an existing agricultural economy. The low productivity of farm labor, land and other resources in the agricultural sector is largely due to the lack of certain complementary inputs of a technical, educational, and institutional nature. Under these circumstances a crucial requirement for devising an appropriate agricultural development program is to identify these complementary inputs, determine in what proportions they should be combined, and establish priorities among programs designed to increase their availability.

Such a policy for agricultural development, emphasizing measures to increase the efficiency of an existing labor-intensive agriculture and with chief reliance on technological innovations rather than large capital investments, is obviously *not* applicable under all conditions. It is therefore convenient, even at the risk of considerable over-simplification, to emphasize the changing position by defining three specific phases of agricultural development: Phase I: Développement of agricultural preconditions. Phase II: Expansion of agricultural production based on labor-intensive, capital-saving techniques, relying heavily on technological innovations. Phase III: Expansion of agricultural production based on capital-intensive, labor-saving techniques.

The labor-intensive, capital-saving approach to agricultural development, appropriate to Phase II, requires an environment in which the possibility of change is recognized and accepted, and in which individual farmers see the possibility of personal gain from technological improvement. Phase I is defined as the period in which these preconditions are met.

Improvements in land tenure are likely to be the most essential requirement in Phase I since an unfavorable tenure situation may stifle the incentive for change even though the potential exists for large increases in output.¹⁸ Rural attitudes toward change are also influenced by the attractiveness and availability of consumer goods, awareness of the possibility of technical improvements, availability of market out-

¹⁸ It is impossible to do more than call attention to this complex and important subject of land reform in this general treatment of agricultural development and its relation to over-all economic growth. Philip Raup has presented a persuasive statement of the economic importance of land tenure reform [41]. See also Doreen Warriner [51].

lets, and many other factors. If traditional group restraints and individual attitudes hostile to change seriously impede agricultural progress, considerable importance attaches to community development programs emphasizing adult literacy, self-help programs directed at the satisfaction of "felt needs," and similar activities that promote greater receptivity to change. There are probably relatively few underdeveloped areas where agricultural policies should be based on the assumption that the preconditions phase prevails.¹⁹ But certainly there are situations in which deficiencies in the institutional environment or attitudes unfavorable to change are critical limiting factors; and in any event, continuing improvement in institutions and incentives can be expected to facilitate agricultural progress.

At the other end of the spectrum, the capital-intensive, labor-saving technology of Phase III typically represents a fairly late stage of development, especially for countries with a high population density. Japan, for example, is apparently just entering this stage. In this phase, the opportunity costs of most inputs, including labor, are high by past standards and rising. Not only is the use of labor-saving farm machinery increasing but the use of many other urban-produced inputs is expanding as well. Hence the need for credit facilities becomes acute. Phase III is generally distinguished by the fact that a substantial amount of structural transformation has occurred so that agriculture no longer bulks so large in the economy.

Agricultural development policies in Phase II. The emphasis in Phase II on increasing the efficiency of an existing agriculture by heavy reliance on technical innovations associated with labor-intensive, capital-saving techniques, is related to certain distinguishing features of this stage of development: (1) agriculture represents a large proportion of the economy; (2) the demand for agricultural products is increasing substantially, but the "required" increase in output of food for domestic consumption is fixed within fairly narrow limits determined by the rate of increase of population and of per capita incomes; (3) capital for the expanding industrial sector is particularly scarce; and (4) the distinction between resources of high opportunity cost and those which are abundant in agriculture and characterized by low opportunity cost is of considerable importance.

¹⁹ With respect to the limitations on development that have been attributed to the allegedly irrational behavior of peasant agricultural producers, there seems to be a growing consensus that this view, espoused particularly by J. H. Boeke, is not borne out by the available evidence. Joosten, whose analysis of rubber exports in Indonesia refutes Boeke's notion of a perverse supply schedule, concludes that: "... a scrutiny of the facts shows that the peasant farms his land as rationally as possible under the social and economic conditions affecting him and within the limit of his opportunities as regard labour, land, markets, capital, knowledge and managerial skill" [25, p. 99]. Most of those who have given careful study to the problems of peasant agriculture would indorse that view (see for example [24]).

The design of an appropriate strategy for increasing agricultural productivity requires a high degree of judgment and intimate knowledge of the physical resources and agricultural characteristics of a particular region. Precise determination of an optimal production system, including optimal factor-factor and factor-product relations and operation of the various developmental services at optimal levels, is impossible. There is an inevitable and substantial margin of uncertainty in anticipating the returns likely to accrue from research programs and in forecasting the effectiveness with which knowledge of improved techniques will be disseminated and applied by individual farm operators. Moreover, the importance of innovations developed by individual farmers, an important feature of a progressive agriculture, is even more difficult to anticipate.

The essence of the problem is to identify those factors that are currently limiting increased production and to define a combination of inputs that will yield large returns in increased farm output and productivity. Although general presumptions may be of some value as a guide to research and analysis, there is no substitute for farm-level studies carried out in areas representative of the different types of farming situations that exist within a country or region. Such studies are needed to determine the nature of present input combinations and returns and ways in which efficient decisions and practices at the farm level are hindered by lack of essential inputs.

A number of attempts have been made to inventory the "nonconventional inputs" important for increasing agricultural productivity.³⁰ Four categories of complementary inputs or developmental services may be listed: (1) research to develop improved production possibilities; (2) extension-education programs; (3) facilities for supplying inputs of new and improved forms, particularly improved seed and fertilizers; (4) institutional facilities for servicing agricultural production, such as credit and marketing agencies, and rural governmental bodies for fostering collective action such as building feeder roads. These complementary inputs have a number of characteristics important to the agricultural development process:

First, they come from outside traditional agriculture. The individual farm operator makes the decision, for example, whether to use fertilizer or improved seed if those inputs are available. But whether the fertilizer or seed is available in a time, place, and form conducive to increased production is in large part determined by influences beyond the control of the individual farmer.

Secondly, all of these nonconventional inputs or developmental services include a large institutional component. Since agricultural research and extension-education programs offer tremendous external economies

³⁰ See for example [13] [34].

these functions are normally performed by governmental agencies. Under the conditions existing in low-income countries, it is also frequently desirable for government to encourage the creation of, or even to provide, the institutional facilities required to supply certain production inputs and credit and to process and market agricultural products.

Third, and most important, is the existence of important complementarities among the various conventional and nonconventional inputs. It is largely because of these complementarities that research and extension programs and making available fertilizers and other critical inputs can yield large returns in increasing productivity of the resources already committed to agriculture. Careful proportioning of the added inputs is also important. The interrelationship between the development of improved seed and increased use of fertilizer has already been stressed in reviewing the experience of Japan and Taiwan.

In addition to recognizing the desirability of economizing on resources of high opportunity cost, special attention needs to be given to concentrating resources on programs of the highest priority. Establishing a large number of objectives involves a twofold danger. An attack on items that are not currently of strategic importance obviously increases expenditure and lowers returns on investment. Perhaps even more serious, undue dispersion of effort reduces the effectiveness of critical programs because the shortage of competent administrative personnel imposes a severe limitation on the effectiveness of agricultural development programs.

This last consideration weighs heavily against price support and credit programs which require a considerable amount of high-level administrative talent.²¹ The need to concentrate limited resources on priority programs also makes it desirable to identify those geographical regions within a country that have high potential for large increases in production. Ability to supply the food requirements of expanding urban centers or a capacity for low-cost production of export crops with good market prospects are likely to be particularly pertinent considerations.²²

²¹ It is sometimes argued (e.g. [13, pp. 25-28]) that it is necessary to shift risk and uncertainty from the innovating farmer to other persons. But the members of the farm population in an underdeveloped country are not at a common level of poverty, and there is usually a group controlling a substantial proportion of the land, with asset and income positions well above the average, which is capable of bearing the risk and uncertainty of innovation and investment. Improved credit institutions become a high priority need as the use of capital equipment becomes more important.

²² The Swynnerton Plan for accelerated development of African agriculture in Kenya is an important example of a plan and program that have given special attention to "lands of high potential" [7, pp. 9-15]. B. van de Walle's sketch of a plan for agricultural development of the Congo advocates concentration of resources on areas of high potential for export crop production or which possess locational advantages in supplying urban centers; the limited investments in other areas would be justified by social rather than economic considerations [47, p. 48].

For many countries the most critical components of an agricultural development program in Phase II are (1) research, (2) programs to make knowledge of improved technology available to farmers, (3) arrangements for supplying certain strategic new types of inputs, and (4) enlarged educational opportunities. Introduction of new crops may offer a potential for large increases in the value of agricultural output and frequently enlarged foreign-exchange proceeds as well. But this is dependent, in part at least, upon research to establish the suitability of possible crops to local conditions, to provide planting material, and to determine appropriate cultural practices.

1. *Agricultural research.* The advances in scientific understanding, particularly during the past century, represent a possible windfall gain for a country launching a program of agricultural development today. It is largely because of the accumulated knowledge in such fields as soil science, plant nutrition, and genetics that there are the potential increments of productivity which provide the opportunity for taking up slack in a developing economy. Although an underdeveloped country can draw on the fundamental research and understanding that have been accumulated, the identification of promising avenues of progress and the testing and adapting of improved seed and cultural practices to local conditions are indispensable for realizing the gains that are attainable.

Mounting an effective agricultural research program is a long-term project that depends heavily on continuity of personnel. Shortage of qualified agricultural scientists is a critical problem which can be overcome only in part by employment of research workers from abroad.²³ So basic is an effective program of research to the other elements of an agricultural development program that it represents one of the few instances in which plans and budget allocations should err on the side of boldness, provided that this openhandedness applies only within the limits of carefully determined research priorities.

2. *Extension-education programs.* The effectiveness of agricultural research is dependent upon an extension-education program which carries research findings to farmers and carries knowledge of farmers' problems back to the research staff. The extension techniques that have been effective in the United States are not necessarily appropriate in other countries. Japan achieved notable results without an extension service per se; extension-type activities were performed by local experiment stations, village agricultural associations, and in other ways. In Jamaica and Denmark a network of agricultural societies has provided

²³ The cooperative program of the Rockefeller Foundation and the Ministry of Agriculture in Mexico owes much of its success to the continuity of service of the key scientists and the emphasis given to the training of young Mexican agricultural scientists [15].

an effective mechanism. Where farmer resistance to change is strong there may be a need for programs of supervised credit or subsidization of new inputs; and under some circumstances a government tractor-hire service might be justified in part as a technique for securing acceptance of improved practices or more productive farming systems. But the final success of a program to develop agriculture depends on training tradition-bound farmers to make economically sound decisions regarding new alternatives.²⁴

A commonly recommended alternative to the slow process of training the mass of farmers to make their own decisions is to institute some form of large-scale farming using specialized management, such as collective farms and various types of cooperative farming. But economies of scale in agriculture do not continue for nearly as far out the scale line as in the case of other forms of production. The high degree of variability in agriculture poses problems of management and decision-making which cannot be centralized without considerable duplication of effort. Brewster has stressed particularly the large number of "on-the-spot supervisory decisions" that must be made in agriculture [3]. There is a basic difference between agriculture and industry in this respect because the biological nature of the agricultural production process means that the operations to be performed are separated in time and space. This increases the importance of these on-the-spot supervisory decisions and reduces some of the advantages of mechanization.²⁵ A further significant economic advantage of decentralized management and decision-making arises from the more direct individual interest in the outcome of the farm enterprise with consequent favorable effects on incentives, initiative, and upon what Raup has termed the "accretionary process of capital formation" that are of such importance in agriculture.²⁶

²⁴ For discussion of the problems and feasibility of a program of management assistance to farmers in low-income countries, see [20].

²⁵ An interesting study by G. K. Boon of conditions under which mechanization is economical in the construction of field trenches emphasizes that "labour-intensive methods in construction are characterized by the absence of some of the disadvantages which they usually imply in industrial processes"; for example, "substituting labour for machinery for construction processes does not involve larger factory buildings and other extra capital outlays" [2, pp. 11-12]. This sort of contrast is, of course, even more evident in the differences between agricultural and industrial processes.

²⁶ Raup stresses the influence of a suitable tenure situation and of the time-consuming character of production processes upon capital accumulation in agriculture. Both elements are important, for example, in the growth of livestock numbers and quality as a result of slow improvements in feeding levels and better management and disease protection [41, p. 14]. Likewise, he emphasizes the importance of "periodic unemployment" in agriculture when the opportunity cost of labor is measured only in the reservation price of leisure time. "An incentive system that will maximize the investment of this labor in the firm is one of the basic requirements for agricultural growth. In terms of capital creation that structure is best which creates the maximum likelihood that the farm family will elect to 'exploit' its own labor" [41, p. 22].

Judging from the experience of collective farms and production co-operatives these considerations are of considerable importance; but they do not rule out the possibility of exceptions. It has been noted, for example, that plantations may facilitate the introduction of new export crops for which the capital and technical requirements are demanding, particularly if integration of production and processing is important for the control of quality [21, p. 342]. These advantages of large-scale production depend upon a high level of managerial skill; and they are likely to be temporary.²⁷ Similarly, some form of tractor-hire service or contract plowing provided either by the agricultural department, a co-operative, or private entrepreneurs, may be an economical arrangement, particularly if technical considerations such as deep or timely plowing are important.²⁸

3. *Supply of strategic new types of inputs.* Certain of the complementary inputs of critical importance to increasing agricultural production in Phase II are items such as chemical fertilizers that are new and must be supplied from outside the traditional village economy. Fertilizers and pesticides depend upon the establishment of new productive capacity or upon foreign exchange for imports; thus they compete directly for scarce resources of high opportunity cost. The returns on investment in those inputs, however, can be extremely high provided that the full range of complementary inputs is available—notably improved seed, knowledge of fertilizer response under various soil and cropping situations, and an extension organization capable of disseminating information to farmers.

The new inputs also require new institutional facilities to make them available at the farm level. In some countries fertilizer manufacturers have done this job effectively, but frequently in the earlier stages of development it is necessary for the government agricultural service or cooperatives to perform this function. To make available supplies of improved seed requires intricate institutional arrangements for seed multiplication and distribution so as to insure a pure supply; and here again governmental initiative is likely to be essential.

Improvement of transportation facilities may also be crucial to farmer utilization of purchased inputs. Improved transportation also

²⁷ In past years it was claimed that African smallholders could not produce high quality Arabica coffee in Kenya; but in the last ten years there has been a spectacular expansion of production by African producers. Problems of quality control have been difficult but by no means insoluble. This development has, of course, been supported by government research and extension programs and loans to facilitate the establishment of cooperative pulping stations.

²⁸ The highly successful Gezira Scheme in the Sudan exemplifies an interesting combination of labor-intensive and capital-intensive techniques [11, pp. 230-34].

increases production incentives through higher farm prices and speeds the spread of innovation through improved communication.

4. *Education and agricultural development.* Virtually all aspects of agricultural development hinge on developing a broad range of educational institutions. The critical problems concern the use of the small nucleus of trained personnel to staff training programs and the financial burden arising from enlarged expenditures for education.

Despite difficulties of finance and lack of trained teachers, many underdeveloped countries today are committed to large-scale expansion of educational facilities. This increased supply of trained people can be turned to good account in agriculture since trained manpower is needed to remove the bottleneck to efficient utilization of the labor and land resources that are already abundant in this sector. This is in marked contrast to the situation in industry where the large requirements for capital equipment to be combined with labor constitute a bottleneck to rapidly expanding the utilization of trained labor.

Efforts aimed at developing local government institutions, increasing literacy, and instituting rural social changes by community development or other techniques can be commenced by personnel with slight initial training supplemented by continuing in-service training. Even in the case of agricultural extension, programs at the early stages can emphasize relatively simple production innovations such as fertilizer-seed combinations, introduction of improved tools, and efforts to raise the general standard of husbandry nearer to that of the better farmers. The spread of education among the farm population broadens horizons, provides necessary skills for keeping records and accounts, and strengthens the capacity of farmers to make rational decisions.

Agricultural development in Phase II is potentially a dynamic process characterized by continuing increase in agricultural productivity.²⁹ This is so in part because of differential rates of adoption of new technology, but it is also a consequence of the continuing stream of innovations generated by an effective research program. This continuing growth of farm productivity depends on a large number of changes which individually give relatively small response but collectively add up to a large response. It requires continued improvement in incentives and in the institutions serving agriculture, including further re-

²⁹ Higgins argues incorrectly that "with the labor-intensive techniques of small-scale peasant agriculture the opportunities for technological improvement are extremely limited" [16, p. 422]. His assertion seems to be based on the erroneous view that agricultural development at this stage is a one-shot proposition—shifting from "bad" seed and practices to "good" seed and practices—and that a dynamic process of agricultural development is impossible until "the discontinuous jump to more extensive and more mechanized agriculture" can be made [16, p. 422].

finement in the operation of the research and extension organizations, and the establishment or strengthening of institutions of higher education to provide the needed professional and administrative personnel.

IV. *Conclusions*

In this examination of agriculture's role in the process of economic development, an attempt has been made to emphasize features that have a high degree of generality. But diversity among nations and the variety that is so characteristic of agriculture inevitably limits the validity of a condensed, general treatment. The density of the rural population and the stage of economic development that has been reached stand out as having a particularly significant bearing on the importance of some of the factors examined in this paper.

Despite these qualifications, it is believed that the general thesis advanced has wide relevance: rural welfare as well as over-all economic growth demand a transformation of a country's economic structure, involving relative decline of the agricultural sector, and a net flow of capital and other resources from agriculture to the industrial sector of the economy. Agriculture's contribution to the requirements for development capital is especially significant in the earlier stages of the process of growth; it will not be so crucial in countries which have the possibility of securing a sizeable fraction of their capital requirements by export of mineral products or in the form of foreign loans or grants.

Policies that take account of this process of secular transformation and its implications are in the long-run interest of the farm population as well as the country as a whole. Reduction of the farm labor force is a necessary condition for establishing factor proportions that yield returns to labor in agriculture that are more or less in accord with returns to labor in other sectors. More concretely, insufficient movement out of agriculture will perpetuate, or lead to, excessively small farms and serious underemployment of labor as the proximate causes of sub-standard farm incomes.

Although this paper has stressed the importance of agriculture's role in development, we part company with those who draw the inference that agricultural development should precede or take priority over industrial expansion. Sayigh, who can be taken as representative of that view, asserts that "deep progress cannot be achieved on both these fronts simultaneously" [44, p. 448]. It is our contention that "balanced growth" is needed in the sense of simultaneous efforts to promote agricultural and industrial development. We recognize that there are severe limitations on the capacity of an underdeveloped country to do everything at once. But it is precisely this consideration which underscores the importance of developing agriculture in such a way as to

both minimize its demands upon resources most needed for industrial development and maximize its net contribution to the capital required for general economic growth. ✓

REFERENCES

1. D. E. BELL, "Allocating Development Resources: Some Observations Based on Pakistan Experience," in *Public Policy—A Yearbook of the Graduate School of Public Administration, Harvard University 1959*. Cambridge 1959.
2. G. K. BOON, *Alternative Techniques of Production, A Case Study of a Construction Process—Field Trenches*. Netherlands Economic Institute, Progress Report No. 5, Pub. no. 2060. Rotterdam 1960.
3. J. M. BREWSTER, "The Machine Process in Agriculture and Industry," *Jour. Farm Econ.*, Feb. 1950, 32, 69-81.
4. H. B. CHENERY, "The Application of Investment Criteria," *Quart. Jour. Econ.*, Feb. 1953, 67, 77-96.
5. —, "Development Policies and Programmes," *Econ. Bull. for Latin America*, March 1958, 3, 51-77.
6. C. CLARK, *Conditions of Economic Progress*. London 1951.
7. COLONY AND PROTECTORATE OF KENYA, *A Plan to Intensify the Development of African Agriculture in Kenya*. Nairobi 1954.
8. F. DOVRING, "The Share of Agriculture in a Growing Population," *FAO Mo. Bull. Agri. Econ. and Stat.*, Aug.-Sept. 1959, 8, 1-11.
9. O. ECKSTEIN, "Investment Criteria for Economic Development and the Theory of Intertemporal Welfare Economics," *Quart. Jour. Econ.*, Feb. 1957, 71, 56-85.
10. J. M. FLEMING, "External Economies and the Doctrine of Balanced Growth," *Econ. Jour.*, June 1955, pp. 241-56.
11. A. GAITSKELL, *Gezira, A Story of Development in the Sudan*. London 1959.
12. N. GEORGESCU-ROEGEN, "Economic Theory and Agrarian Economics," *Oxford Econ. Papers*, N. S., Feb. 1960, 12, 1-41.
13. GOVERNMENT OF INDIA, MINISTRY OF FOOD AND AGRICULTURE, *Report on India's Food Crisis and How to Meet It*. New Delhi, Apr. 1959.
14. Z. GRILICHES, "Research Costs and Social Returns: Hybrid Corn and Related Innovations," *Jour. Pol. Econ.*, Oct. 1958, 66, 419-31.
15. J. G. HARRAR, "International Collaboration in Food Production," Address before the Agricultural Research Institute, National Academy of Sciences—National Research Council, Washington, D.C., Oct. 4, 1954.
16. B. HIGGINS, *Economic Development. Principles, Problems, and Policies*. New York 1959.
17. INDIAN COOPERATIVE UNION, *Rural Development and Credit Project, Evaluation Report*. New Delhi 1960.
18. INSTITUTE OF FARM MANAGEMENT AND AGRICULTURAL ECONOMICS, *Technical and Economic Changes in Danish Farming, 40 years of Farm Records 1917-1957*. Copenhagen 1959.

19. E. JENSEN, *Danish Agriculture: Its Economic Development*. Copenhagen 1937.
20. S. E. JOHNSON, "Management Assistance in Farming," *Indian Jour. Agr. Econ.*, Oct.-Dec. 1959, 14, 27-32.
21. B. F. JOHNSTON AND J. W. MELLOR, "The Nature of Agriculture's Contributions to Economic Development," *Food Research Inst. Stud.*, Nov. 1960, 1, 335-56.
22. B. F. JOHNSTON, "Agricultural Development and Economic Transformation: Japan, Taiwan, and Denmark," Paper prepared for an SSRC Conference on Relations Between Agriculture and Economic Growth, Stanford, Nov. 1960.
23. —, "Agricultural Productivity and Economic Development in Japan," *Jour. Pol. Econ.*, Dec. 1951, 49, 498-513.
24. W. O. JONES, "Economic Man in Africa," *Food Research Inst. Stud.*, May 1960, 1, 107-34.
25. J. H. L. JOOSTEN, "Perverse Supply Curves in Less Developed Economies?," *Netherlands Jour. Agr. Sci.*, May 1960, 8, 98-102.
26. S. KUZNETS, *Six Lectures on Economic Growth*. Glencoe, Ill. 1959.
27. M. LATIL, *L'évolution du revenu agricole*. Paris 1956.
28. H. LEIBENSTEIN, *Economic Backwardness and Economic Growth*. New York 1957.
29. W. A. LEWIS, "Economic Development with Unlimited Supplies of Labour," *Manchester School*, May 1954, 22, 139-91.
30. —, "Unlimited Labour: Further Notes," *Manchester School*, Jan. 1958, 26, 1-32.
31. —, *The Theory of Economic Growth*. Homewood, Ill. 1955.
32. —, *Report on Industrialization and the Gold Coast*. Gold Coast Government, Accra 1953.
33. J. W. MELLOR AND R. D. STEVENS, "The Average and Marginal Product of Farm Labor in Underdeveloped Countries," *Jour. Farm Econ.*, Aug. 1956, 38, 780-91.
34. A. T. MOSHER, *Technical Cooperation in Latin-American Agriculture*. Chicago 1957.
35. H. G. MOULTON, *Japan: An Economic and Financial Appraisal*. Washington, D.C. 1931.
36. R. NURKSE, *Patterns of Trade and Development*. Stockholm 1959.
37. K. OHKAWA, "Economic Growth and Agriculture," *Annals Hitotsubashi Acad.*, Oct. 1956, 7, 46-60.
38. K. OHKAWA AND H. ROZOVSKY, "The Role of Agriculture in Modern Japanese Economic Development," paper prepared for the Carmel Conference on Urban-Rural Relations in the Modernization of Japan, August 1959; published in a shorter version in *Econ. Develop. and Cult. Change*, Oct. 1960, Pt. II, 9, 43-67.
39. E. M. OJALA, *Agriculture and Economic Progress*. London 1952.
40. G. RANIS, "The Financing of Japanese Economic Development," *Econ. Hist. Rev.*, Apr. 1959, 11, 440-54.

41. P. M. RAUP, "The Contribution of Land Reforms to Agricultural Development: An Analytical Framework," Paper prepared for an SSRC Conference on Relations Between Agriculture and Economic Growth, Stanford, Nov. 1960.
42. H. ROSOVSKY, "Japanese Capital Formation: The Role of the Public Sector," *Jour. Econ. Hist.*, Sept. 1959, 19, 350-73.
43. V. W. RUTTAN, "Agricultural and Non-Agricultural Growth in Output per Unit of Input," *Jour. Farm Econ.*, Proc., Dec. 1957, 39, 1566-76.
44. Y. A. SAYIGH, "The Place of Agriculture in Economic Development," *Agricultural Situation in India* (New Delhi, 1959), 14, Annual Number, p. 445.
45. T. W. SCHULTZ, *The Economic Organization of Agriculture*. New York 1953.
46. F. C. SHORTER, "Foodgrains Policy in East Pakistan," in *Public Policy—A Yearbook of the Graduate School of Public Administration, Harvard University 1959*. Cambridge 1959.
47. B. VAN DE WALLE, *Essai d'une planification de l'économie agricole congolaise*, INEAC Sér. Tech. No. 61. Brussels 1960.
48. J. VINER, *International Trade and Economic Development*. Glencoe, Ill. 1952.
49. H. P. WALD, *Taxation of Agricultural Land in Underdeveloped Countries*. Cambridge 1959.
50. D. WALKER AND C. EHRLICH, "Stabilization and Development Policy in Uganda," *Kyklos*, 1959, 12, 341-53.
51. D. WARRINER, *Land Reform and Economic Development*, National Bank of Egypt, 50th Anniversary Commemorative Lectures. Cairo 1955.

WELFARE CRITERIA FOR EXTERNAL EFFECTS

By E. J. MISHAN

In a world of rapidly increasing population and of material growth, the problems economists associate with external diseconomies—the inevitable treading on each other's toes—are pushed to the forefront of public controversy. Sooner or later one form or another of external diseconomy becomes recognized as a major social problem and the hands of central or local authorities are forced by the clamor of the public that something be done. Unless economists are prepared to give advice in such cases, initiative will pass into the hands of the “planners,” the engineers and the administrators, with results that may well be as irreversible as they are, sometimes, deplorable.¹

In order to place our analysis in a proper setting, we may regard the main lines of recent developments as tracing two approaches to welfare problems: First, the general allocation approach, in accordance with which we find ourselves dabbling in optimum conditions and marginal cost rules, is directed at, in some sense, a *best* position for the community. Alternatively, we can employ a comparative and piecemeal analysis which confines itself to the more modest task of ascertaining a *better* position for society. These two approaches are plainly complementary, for in moving from one better position to another we are in effect moving closer to a best position.

Now the former, the general allocation approach, does not skirt the problem raised by “external effects”—a term we shall use as a shorthand for external economies and diseconomies with particular reference to their direct effects on individuals as distinct from their effects on firms. In employing allocation rules to identify an optimum position there is already a fairly long tradition of distinguishing between private and social benefit (or between private and social cost). In contrast, the contributors to recent developments of the piecemeal approach have apparently been so absorbed in the intricacies arising from different notions of hypothetical compensation that this desideratum

¹ For instance, the stock approach to the traffic problem of administrators and engineers (in this connection see the recent Herbert Report on Greater London [9, paras. 398-99] is to estimate by simple extrapolation, the number of vehicles expected in the economy over the next ten or twenty years and to propose a “modern road system” to accommodate them. A city where the advice of such planners has apparently prevailed is Los Angeles where, for all the efforts made, the solution to the traffic problem is not yet in sight.

has been overlooked.² This would matter less if the general allocation analysis held out more hope in the solution of welfare problems. But this is hard to believe. Unless the allocation rule adopted is met in nearly every sector of the economy it is, ostensibly, of little use to employ the adopted rule in those sectors where it can be met.³ Moreover,

² In order to compress economic data to dimensions manageable by these welfare criteria, or rather to the two compensation tests which are their main feature, recourse has been had to criteria involving index numbers. But the buds of hope inspired *inter alia* by Hicks' paper of 1940 [1] soon withered on the stem. For it transpired that the index number test gave rise to an apparent inconsistency in much the same way as the ordinary compensation tests. Thus, although for each individual taken alone an "inconsistent" result of applying the index number criterion reveals—if we rule out inconsistent behavior—changes in taste, for the community taken as a whole the same "inconsistency" may be indicative either of a change in tastes or, with tastes for each individual unaltered, a change in the distribution of welfare among them.

Such a discovery does not of itself amount to a strong case against the use of the index number criterion as an index of welfare. Since welfare distributions are inseverable from the problem, any apparent paradox arising from the index number criterion might be resolved in the same way as that arising from the compensation tests—through a judgment about the distribution of welfare. A stronger argument against the use of the index number criterion is that it permits us to make comparisons only as between actual and *historical* situations, and not—as we should like in welfare analysis—between actual and *prospective* situations. The most, then, that can be expected from such an index number criterion is a comparison of the community's welfare over a recent period, say two to ten years. But for such purposes we really have no need for this criterion. We already know that, taking one year with another, output per capita is on the increase which—in the most favorable of conditions—is all that can be gathered from the index number criterion. Indeed, if we are persuaded also that economic equality is growing—a desirable trend, let us suppose—then we can agree that, in consequence of economic growth, Little's welfare criteria may be met without having recourse to any index number criterion. However, once we remind ourselves that all external economies and diseconomies are excluded by the usual indices of per capita output, by the index number criterion, and by Little's welfare criteria, nothing may be concluded from them about the welfare effects of economic growth.

The need then to develop criteria to take account of external effects is obvious enough, the first step being to provide some conceptual framework. Although, except for a passing reference, the question of actual measurement is not discussed, we are bound to exclude the possibility of making any use of index number criteria in this connection even for historical comparisons since it is the nature of such criteria to make use of market prices and quantities, the very things we must look beyond in attending to external effects.

³ I do not subscribe to the extreme view sometimes attributed to second-best theory (see in particular Lipsey and Lancaster [3]), that unless the outputs of each and every sector can be varied to meet the adopted rule, say price equals marginal cost, it is useless to apply the same rule to the remaining sectors and that, therefore nothing in general may be said.

If one or two sectors are impervious to the rule but the remaining sectors comply with it, we do have some useful information; namely, that the outputs of the unaccommodating sectors are too small (or too large) by so much. We then have a good idea of how close to a complete optimum position we are. Such knowledge is surely worth having and, indeed, such a position—though inferior to an ideal but quite undiscoverable second-best position—well worth attaining.

Again, if the rule adopted is met by all concerns within a specialized sector, say transport, then although the share of the nation's resources used in the transport sector may be somewhat too large or too small (compared with what it would be if a single allocation

the fact that indivisibilities loom large in external effects adds to one's doubts about the value of the conventional general approach expressed as it is in terms of marginal equalities.

Compared with this state of affairs, the piecemeal analysis does hold out fair prospects. To arbitrate as between an existing economic situation and an alternative economic situation, one in which some small change is contemplated, is not outside the bounds of possibility. Indeed, since so many welfare problems involve no more than a change in the amount of the good producing the external effect, they may be relatively simple to handle. All that remains is to fashion suitable welfare criteria for such cases.

I. Appraisal of Little's Welfare Criteria

A brief recapitulation of the welfare criteria proposed by I. M. D. Little [4], though it will also provide the opportunity to tidy up some loose ends, has as its main object to reveal at all points the symmetry of Little's criteria, and their contrast, with those to be developed in this paper.

Along the X and Y axes of each diagram of Figure I are measured the amounts of the goods X and Y consumed by the community. Q_1 represents the existing batch of goods, and I_1 is a community indifference curve whose slope, as it passes through Q_1 , shows the rate of substitution between the two goods X and Y common to each individual in the community when the goods are distributed among the individuals in a particular way. (Thus, if there were only two individuals, the line OQ_1 in Figure 1(b) would trace the contract curve between them. Point c_1 on the contract curve would reveal the division of the batch Q_1 between them, and the slope of their mutually tangent indifference curves at c_1 their common rate of substitution—equal, by construction, to the slope of I_1 at Q_1).

Q_2 is an alternative batch of goods available to the community, distributed differently from the first batch and consequently having its own community indifference curve I_2 . (Again, if there are but two individuals, the line OQ_2 in Figure 1(b) would trace their contract curve, point c_2 would mark the division between them of the Q_2 batch, and the slope of mutual tangency at c_2 would equal the slope of I_2 as it passes through Q_2).

Before examining four main cases with the aid of the four diagrams,

rule prevailed throughout the entire economy), *within* the transport sector the utilized resources are properly allocated—ignoring, of course, external effects.

If the factors used in transport are specific to that sector though at the same time easily transferable within that sector, we should in any case be constrained in the short run to apply our rule to all transport concerns which make up that sector in disregard of the situation in the rest of the economy.

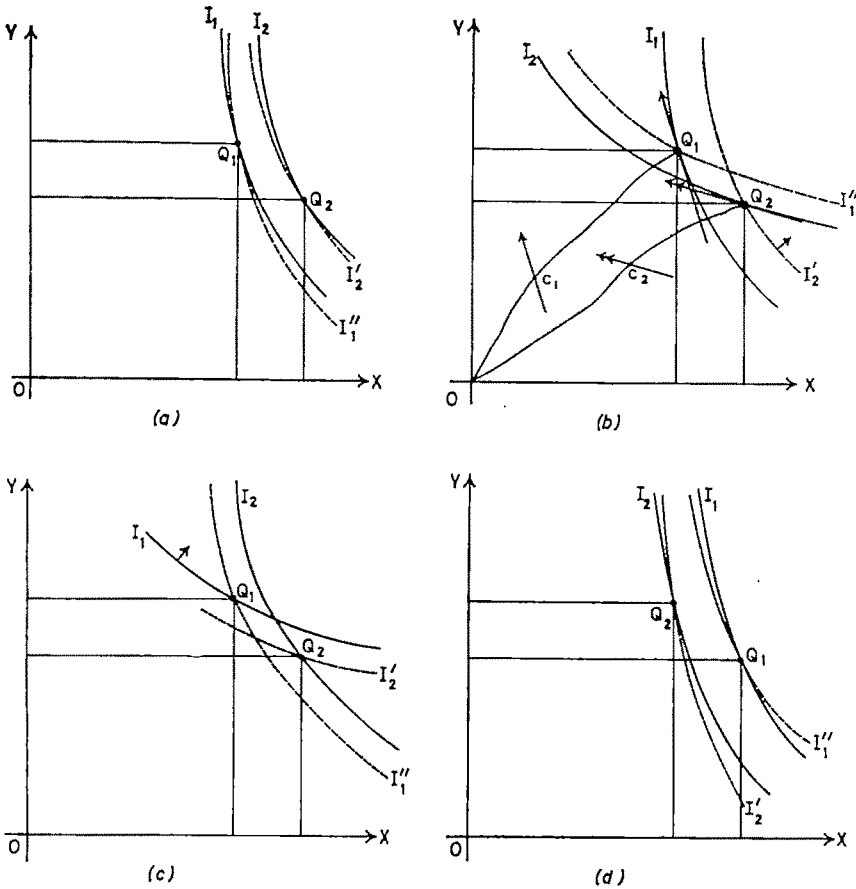


FIGURE 1

let us quickly run through the meaning of the familiar tests of hypothetical compensation we shall make use of:

The Kaldor-Hicks test is met if, in a movement from Q_1 to Q_2 , everyone could be made better off in Q_2 than he was in Q_1 .

The nonfulfillment of the Kaldor-Hicks test is not merely the negation of the Kaldor-Hicks test but consists of the stronger statement that, in a movement from Q_1 to Q_2 , everyone could be made worse off in Q_2 than he was in Q_1 .

The reversal test, as the term suggests, moves in the reverse direction of the Kaldor-Hicks test. It is met if, in a movement from Q_2 to Q_1 , everyone could be made better off in Q_1 than he was in Q_2 .

The nonfulfillment of the reversal test more than negates the reversal test, for it is met only if, in a movement from Q_2 to Q_1 , everyone could be made worse off in Q_1 than he was in Q_2 .

Finally, as a necessary step in rationalizing Little's welfare criteria, let us agree that either of the following alternations in economic organization constitutes a social improvement: (1) one such that everyone is made better off (where "everyone better off" will be used throughout this paper as an abbreviation for "no one worse off and at least one person better off," and "everyone worse off" will be interpreted in an analogous manner, or (2) one that is judged to result in a more equitable distribution of the existing batch of goods.

If we were to suppose that there were no institutional limitations to direct transfers of income or wealth we could, of course, actually make everyone better off whenever any test of hypothetical compensation was met. Such a supposition, however, is obviously unrealistic: outside the existing system of taxes, further transfers of income or wealth are not feasible. We therefore put aside the possibility of direct and concomitant compensations and consider the following four dual welfare criteria in terms of the above two social improvements.

Case 1(a) is the fulfillment of the Kaldor-Hicks test and also the nonfulfillment of the reversal test (together amounting to a fulfillment of the original Scitovsky criterion [8, pp. 86-87]), plus the judgment that—in a sense made explicit below—the distribution of welfare is more equitable in the new position, Q_2 .⁴ In this relatively straightforward case, illustrated in Figure 1(a), a movement from Q_1 , the old position, to Q_2 has the effect of realizing both social improvements. It is easily appreciated if we regard the actual movement from Q_1 to Q_2 as made up of two hypothetical movements: first, a movement from I_1 (at the point Q_1) to I_2' (at the point Q_2), I_2' being a community indifference curve comparable with that of I_1 (which is to say that along community indifference curve I_2' either everyone is better off—as here—or everyone is worse off than he is along I_1). Everyone being better off on I_2' than he is on I_1 , social improvement (1) has been effected. Second, a redistribution of the Q_2 batch from that associated with I_2' to that associated with I_2 , the community indifference curve actually attaching to the Q_2 batch. Since the only warrantable interpretation of the distribution proviso in this case, 1(a), is that the actual distribution of the Q_2 batch (as indicated by I_2) is judged to be more equitable than that distribution of it associated with I_2' , which is comparable with I_1 , this second movement has the effect of realizing social improvement (2).

Case 1(b) is the fulfillment of the Kaldor-Hicks test, though also the

⁴ Little's comparisons of welfare distributions in different situations have been criticized as implying both interpersonal comparison of utility and measurable utility. Though formally valid as a criticism of the way in which Little expressed his propositions, it is far from being fatal. The way round it has been indicated in my survey paper [7, pp. 226-27] and is investigated closely in the present paper.

fulfillment of the reversal test, plus the judgment that the distribution in the new position is more equitable than in the old. This case is illustrated in Figure 1(b) and reveals the apparent paradox initially uncovered by Scitovsky [8]. Nevertheless, because of the distribution clause, the reversal test becomes irrelevant and the movement from Q_1 to Q_2 in this case also issues in the two social improvements. For by proceeding in two stages as before, a first movement from I_1 to I_2' makes everyone better off, while a second movement from I_2' to I_2 provides a more equitable distribution of the Q_2 batch of goods.

Case 1(c) is the nonfulfillment of the reversal test, though also the nonfulfillment of the Kaldor-Hicks test, plus the judgment that the distribution of welfare is more equitable in the new position. This case also happens to realize social improvements (1) and (2) by a reasoning analogous to the case above. The first step, however, is a more equitable distribution of batch Q_1 which is represented in Figure 1(c) by a movement from I_1 to I_1'' , thereby effecting social improvement (2).⁵ This is followed by a movement from I_1'' (passing through Q_1) to a comparable community indifference curve I_2 (passing through Q_2) thereby making everyone better off and effecting social improvement (1) also.

Case 1(d), the nonfulfillment of the Kaldor-Hicks test and also the fulfillment of the reversal test, plus a better distribution of income, is inconclusive. If we take I_1'' , comparable with I_2 , to indicate a more equitable distribution of the Q_1 batch, thus effecting social improvement (2), a further movement from I_1'' to I_2 makes everyone worse off, effecting thereby a social loss—the converse of (1).⁶ The social gain and the social loss being incommensurable, there is no warrant for recommending a movement to the new position.

On the purely conceptual plane, these dual welfare criteria are satisfactory enough. They are internally consistent and free from ambiguity. In fact we need remember only 1(b) and 1(c), either of which alone implies the fulfillment of (1) and (2). Case 1(a) may be regarded as the simultaneous fulfillment of cases 1(b) and 1(c), and since either of these suffices by itself to recommend a movement to the new position, both taken together certainly suffice also. Case 1(d), on

⁵ The sense in which the welfare distribution of Q_2 is more equitable than that of Q_1 is not the same as that in the previous case 1(b). There, we moved to Q_2 in order, first, to make everyone better off, after which we redistributed Q_2 more equitably. In the present case 1(c), Q_1 is first redistributed in a more equitable manner, following which we make everyone better off by moving to Q_2 . The rationale for this procedure is indicated in footnote 7.

⁶ The result is essentially the same if an alternative interpretation of the distribution proviso required first a movement from I_1 to I_1' , thereby making everyone worse off, followed by a movement from I_1' to I_2 which is judged to be a more equitable distribution of the Q_2 batch.

the other hand, does no more than portray the failure of that case to have the relevant properties either of case 1(b) or of case 1(c).

It will clarify concepts still further if we draw attention to two sources of ambiguity in the different ways these two welfare criteria are sometimes expressed:

1. Little's version of these dual welfare criteria does not in fact require that the distribution in the new position be better than the distribution in the old position. It is enough if the distribution in the new position is *no worse* than it was in the old. Of course, if we substitute this less stringent requirement into our dual welfare criteria, they cannot do more—in the event that the two distributions are equally ranked—than realize social improvement (1) only. To achieve this more modest result in the event of "distributional indifference" as between the two positions requires particular care.

To illustrate in the 1(b) case when the situation is such that the distribution of Q_2 associated with I_2 is judged to be no better or worse than its distribution associated with I_2' , since I_2' reveals everyone to be better off than he is on I_1 (passing through Q_1), we can say that social improvement (1) is effected in the movement from Q_1 to Q_2 . But this result depends on a situation in which the distributions associated with I_2 and I_2' are equally preferred. If, instead, the equally preferred distributions referred to the batch Q_1 and were associated with I_1 and I_1'' —an equally plausible interpretation of Little's distribution proviso—then a further movement from I_1'' to I_2 makes everyone worse off, and a social loss is incurred in moving from Q_1 to Q_2 .

Finally, if the situation is such that both I_2 and I_2' and also I_1 and I_1'' happen to be equally preferred distributions of Q_2 and Q_1 respectively, we have it both ways: the movement from Q_1 to Q_2 can be shown to realize social improvement (1) and can also be shown to realize the converse of (1)—social loss. In effect we are thrown back on the original paradox as revealed by Scitovsky, with no acceptable rule to sanction a movement to the new position.⁷ Analogous remarks

⁷ After this brief exposition of Little's "weak" distribution clause, it may be more readily appreciated why we rejected, in our original 1(b) case, an alternative—though equally legitimate—interpretation of the "strong" distribution proviso that the Q_2 batch be more equitably distributed than the Q_1 batch: why, that is, instead of requiring only (a) that the I_2 distribution of Q_2 was more equitable than its I_2' distribution, we did not require only (b) that the I_1'' distribution of Q_1 was more equitable than its I_1 distribution. The answer is that had we required only (b)—and it was known that the I_2 distribution of Q_2 was less equitable, or no more equitable, than the I_2' distribution of it—we should have no warrant, or a weaker warrant, for recommending a movement from Q_1 to Q_2 .

To illustrate, if we substitute the (b) interpretation but make no use of it, our first movement would be from I_1 to I_2' thereby making everyone better off, our second movement—necessarily from I_2' to I_2 —would involve either a less equitable distribution of the

apply to case 1(c) when equally preferred distributions are involved.

2. A popular rendering of the Kaldor-Hicks compensation test is that it is met "if gainers can overcompensate losers," the reversal test being met "if losers are able to bribe gainers to stay in the old position." Since the comparisons are concerned with different batches of goods, each batch having, in general, a different set of relative prices, the latter expression lends itself to ambiguity.

It is usually understood that, when gainers are able to overcompensate losers, the set of relative prices which makes a comparison of the two batches possible is that associated with the actual distribution of the initial batch [as represented by the slope of I_1 passing through Q_1 in Figure 1(b)]. But when the apparent paradox is conveyed by the statement that it is possible, at one and the same time, for losers to overcompensate (or bribe) gainers to remain at the old position, it lends itself to two interpretations: that this is so (a) when a comparison of the two batches is based on the set of relative prices associated with the initial position, as in the Kaldor-Hicks test, or (b) when a comparison of the two batches is based on the set of relative prices associated with the new position. The first interpretation cannot, however, be admitted since, if it were, the reversal test would logically contradict the Kaldor-Hicks test. The sense of this is not hard to grasp: if, at the initial set of prices (as revealed by the slope of I_1 through Q_1 in Figure 1(b)) the increment in value in moving to the new position is estimated by the gainers to be G , and if at the same set of prices the decrement of value in moving to this new position is estimated by the losers to be L , then the Kaldor-Hicks test is met whenever $G > |L|$. It is obviously not possible that, simultaneously, $|L| > G$ —which is the reversal test on the (a) interpretation.

This argument can be put more precisely in diagrammatic terms. It is *not* possible to construct two community indifference curves passing through Q_2 , each one comparable with I_1 (passing through Q_1), yet one passing above Q_1 thereby fulfilling the Kaldor-Hicks test, and the other

Q_2 batch or a distribution of it that was no more equitable. At best then only social improvement (1) is effected.

If, on the other hand, we did utilize (b), our first step would be a movement from I_1 to I_1'' , a more equitable distribution of the Q_1 batch, while our second movement—necessarily from I_1'' to I_2 —would make everyone worse off. The movement from Q_1 to Q_2 could not therefore be recommended.

A similar argument may be adduced to justify the interpretation put on the proviso that Q_2 have a more equitable distribution than Q_1 in our original case 1(c); viz., that the I_1'' distribution of Q_1 be more equitable than its I_1 distribution. The alternative interpretation, that the I_2 distribution of Q_2 be more equitable than its I_1' distribution would in this case have led to a weaker or negative recommendation. (For a more detailed and systematic examination of the implications of the distribution proviso in batch comparisons, see my Part II of a forthcoming paper on Little's Welfare Criterion in the *Economic Journal*.)

passing below Q_1 thereby fulfilling the reversal test on the (a) interpretation.

For this reason, if for no other, it is advisable to eschew references to compensation and bribery tests, and to express the fulfillment of the Kaldor-Hicks test as requiring that, with a distribution comparable with that of the *initial* position, everyone in the new position can be made better off than he is in the initial position. The fulfillment of the reversal test is just as straightforward. It requires that, with a distribution comparable with that of the *new* position, everyone can be made better off in the old position. The simultaneous fulfillment of these two tests is, of course, quite possible, illustrated as it is in Figure 1(b).

I have labored this point not only to dispel the ambiguity that surrounds this fond and familiar paradox, but also to enable us to perceive more clearly one of the differences between the usual batch comparisons and those comparisons involving only external effects which we treat in the following section. The apparent paradox in batch comparisons has been revealed to stem from the interconnection between distribution and relative valuations.⁸ The same sort of paradox which appears to arise in the case of external effects is, however, due to quite a different phenomenon—indeed, it must be different, since in the treatment of external effects we are to assume that the prices of all the goods are the same both in the new and in the old situation, the two situations differing only in the amount of the good generating the external effects. As we shall see, it stems from the two different ways of evaluating the external effect whether it be regarded as a gain or as a loss.

II. Resemblance and Contrast between Little's Criteria and Those for External Effects

Turning our attention to those cases in which the difference between two situations consists only of the amount of the good responsible for external effects, since this is a good the production or utilization of which on balance bestows benefits on some and inflicts losses on others—gains and losses which, in virtue of the definition of external effects, do not register on the price mechanism—the requisite concept to employ would appear to be some refinement of consumer's surplus or rent. Using this concept we shall extend the application of the usual compensation tests after which, by introducing into the comparison of situations I and II a judgment about distribution, we shall evolve dual welfare criteria analogous to those above that promote either or both of the social improvements (1) and (2).

As has already been shown by Hicks [2], when a person gains from

⁸ This interconnection is explained in some detail in my 1952 paper [5, pp. 318-19].

a reduction in price, or from the introduction of a new good, the benefit he receives from it may be measured in two useful ways: either as the maximum amount of money, om , he would be prepared to pay rather than forego the benefit or as the minimum amount of money, on , he would be willing to accept in order to abandon it. Similarly the loss of a person who suffers from a change in economic circumstances can be measured either as the maximum sum, om' , he would pay in order to avoid the loss or as the minimum sum, on' , he would accept in order to sustain it. As for the relationship of these two measures, from the definition of welfare effects (more frequently referred to as income effects) we know that for each individual on exceeds om whenever the welfare effect with respect to the good in question is positive inasmuch as his level of welfare is higher if he agrees to accept on instead of the good rather than if he pays om to retain it. Conversely, a negative welfare effect with respect to the good (the good in question being inferior) entails that om exceeds on .⁹ In an analogous manner on' exceeds om' when the welfare effect is positive, om' exceeding on' when it is negative.

Let us first work with an all-or-nothing proposal, after which it will be a simple step to make the transition to proposals that allow of quantitative variation. To fix our ideas, we might think of a piece of recreational ground within the precincts of a town on which commercial interests favor the building of a block of flats. Opposing this proposal, we should like to think, is some conscientious economist who puts forward the view that the piece of land in question is a source of recreation and enjoyment to many hundreds of citizens. In such a case it would seem plausible to add together the sums of those who gain by the proposed project—these sums representing the economic rents¹⁰ of

⁹ Let OY_1 (in Figure 3) measure the individual's existing money income, the prices of all other goods being constant, and OX the amount of the good having the external effect which faces the individual as an all-or-nothing proposition. Since he is indifferent as he moves along the curve passing from Y_1 through r , the maximum income he will give up to retain OX is equal to $qr = Y_1Y_0$. At q the individual is on a higher indifference curve having the good OX in addition to his original income OY_1 . By construction he is indifferent as between q and Y_2 , which is to say that he would give up OX if he were paid a minimum sum equal to $qw = Y_1Y_2$.

On the usual definition, X is an inferior good if an increase of welfare, all prices remaining the same, leads to a reduction in the amount of X purchased. A more general definition—one which has reference only to the properties of the indifference map—is as follows: for any given rate of substitution between X and Y , X is an inferior good (that is, it incurs a negative welfare effect) if the amount of X falls as we increase the quantity of Y . By constructing the indifference map in accordance with this definition of X as an inferior good, it can be shown that Y_1Y_2 must be less than Y_0Y_1 . In other words, (as in case 2(b)), the minimum the individual must be paid to forego the good having the external effect (on), is less than the maximum he will pay rather than go without it (om). (N.B. I have preferred to use "welfare effect" as the more general and precise term rather than "income effect" for reasons given in my paper [6].)

¹⁰ Definitions of economic rent symmetric with consumer's surplus are developed in my paper [6].

architects, builders, and others, along with the surpluses of the prospective tenants. Against this sum we juxtapose the sum of the surpluses enjoyed by the citizens from having the view and use of this open piece of land.

We can represent the position by a simple diagram, Figure 2(a), on which the opposing sums are measured vertically. The sum of the maxima that the gainers from the project are willing to pay for the privilege of buying the land is measured as OM . The sum of the minima they will accept in order to induce them to abandon the project is measured as ON . Similarly with the losers from the project:¹¹ the maximum they are together prepared to pay to defeat the project is $O'M'$, while the minimum they are together prepared to accept as a condition for dropping their opposition to the scheme is $O'N'$ (the plain and broken lines ending in arrow heads are drawn only to guide the eye). It will be noticed that for both parties the minimum-acceptable sum exceeds the maximum-payable sum, an assumption of a positive welfare effect for each group with respect to the project.¹²

Figure 2(a) imparts the following information: gainers¹³ from a movement to II, the proposed project, are willing to pay a sum which more than exceeds the minimum required to compensate losers in a movement to II. Moreover, because of the positive welfare effects in each group, it is not possible for the reverse to hold simultaneously. Employing terminology which is more familiar to us, in a movement from I to II gainers can more than compensate losers. It is evident also that no ambiguity arises in this case since losers from the movement to II cannot bribe gainers from that movement to give up the scheme. On the surface of things, this resembles the original Scitovsky criterion—the Kaldor-Hicks test met and the reversal test not met.

Figure 2(b) reveals another possibility. In a movement to II, the maximum sum the gainers will pay exceeds the minimum sum acceptable to the losers, as in the previous case. But unlike the previous case we have the paradoxical situation that the maximum payable by the losers also exceeds the minimum acceptable to the gainers. This case

¹¹ The reader will notice that the words "gainers" and "losers" are being used here in connection with external-effect comparisons notwithstanding some prior advice against the use of this terminology in *batch* comparisons. This is quite deliberate. Not only is the ambiguity referred to in batch comparisons absent in external-effect comparisons in which all prices are held unchanged, but the distinction between gainers and losers, as we shall see, actually facilitates the analysis in these comparisons.

¹² To pay to avoid a "bad" is in no essential way different from paying to acquire a good. A positive welfare effect for an opponent of the scheme also implies, therefore, that he will pay more to avoid it as his welfare increases.

¹³ We should, to be more accurate, speak of *potential* gainers and *potential* losers since the compensation tests contemplated are hypothetical. However, it is less cumbersome to omit the adjective as we may safely do in this context.

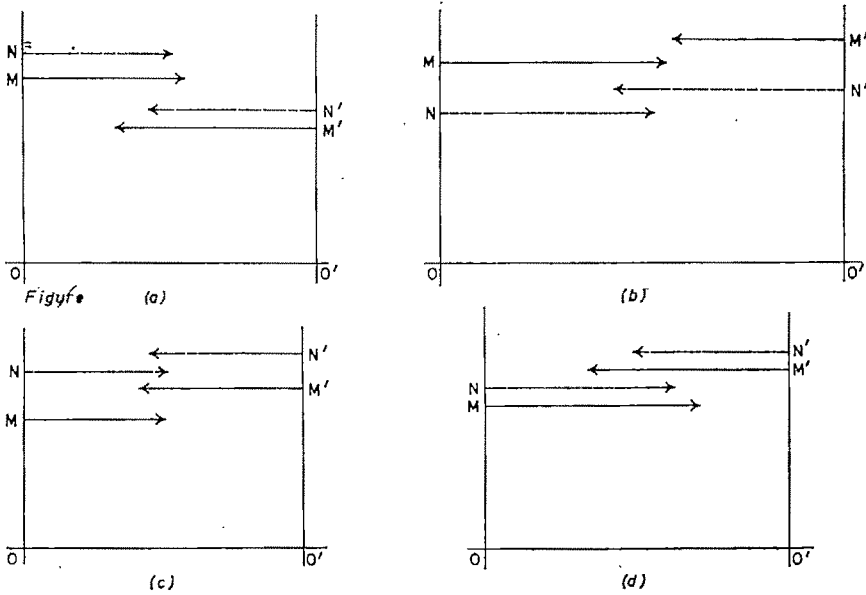


FIGURE 2

superficially resembles that when the Kaldor-Hicks test is met but the reversal test is also met. Such a case may appear implausible when dealing with external effects since, for one side at least (both sides in the Figure), the maximum payable exceeds the minimum acceptable,

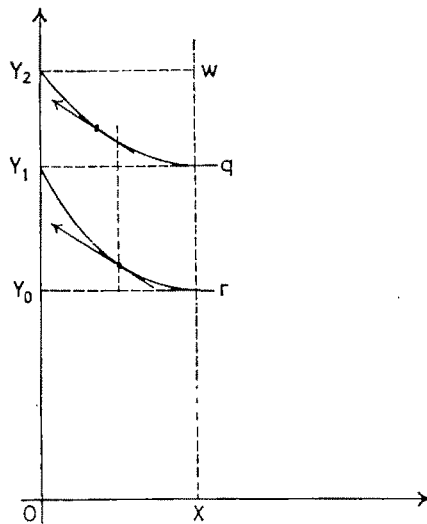


FIGURE 3

a feature indicative of a negative welfare effect in respect of the good carrying the external effect. Nevertheless, we include this case as a theoretical possibility and one that enables us to observe the apparent symmetry between these comparisons and the batch comparisons of Section I.

Figure 2(c) reveals a case which appears the reverse of 2(b). The maximum that gainers are willing to pay falls below the minimum acceptable to the losers and, at the same time, the maximum the losers are willing to pay falls below the minimum acceptable by the gainers from II to induce them to abandon the project. In more familiar parlance, gainers from a movement to II cannot compensate losers but, then, neither can losers bribe gainers to abandon the II project. This situation resembles the case when the Kaldor-Hicks test is not met but neither is the reversal test.¹⁴

Figure 2(d) illustrates the fourth possibility. The maximum gainers will pay falls short of the minimum acceptable to losers while the maximum payable by losers exceeds the minimum acceptable to gainers to induce them to abandon II. In this case, diametrically opposite to 2(a), losers can bribe gainers to stay in the I position while gainers cannot compensate losers to move to the II position. It looks, therefore, as if the reversal test is met and is not contradicted by the Kaldor-Hicks test.

In noting the resemblance of these cases with the batch comparisons of the preceding section, the reader should remind himself that the familiar paradoxes no longer arise from the interdependence of welfare distributions and relative prices but from the proposition that each gainer and each loser from the external effect has, in general, two different subjective estimates of its impact on his welfare.¹⁵

Now if compensation could be arranged in all cases so that we need consider no more than social improvement (1) we should have a clear directive for cases 2(a) and 2(d). In 2(a) we should move to II and make everyone better off by compelling the gainers to compensate the losers. In case 2(d), on the other hand, we are constrained to remain

¹⁴Here, as distinct from the appropriate batch comparison, if the reversal test is not met (that is, everyone in Q_1 is not better off than in Q_2) it does not follow that everyone in Q_2 is better off than he is in Q_1 . Strong ordering does not apply in external-effect comparisons. Thus, while the batch case 1(c) reveals apparently contradictory results, external-effect case 2(c) reveals inconclusive results— Q_2 not better than Q_1 and Q_1 not better than Q_2 .

¹⁵The differences of argument pertaining to the two sorts of comparisons—batch comparisons and external-effect comparisons—are emphasized throughout this paper since the overt parallelism is so striking that without painstaking examination it might easily be supposed that such parallelism arises from basic attributes common to both sorts of comparisons.

in the I position. For if we had moved to II, everybody could be made better off by returning to I and compelling the gainers from the return (the losers from the II position) to compensate the losers from the return (the gainers in a movement from I to II). As for case 2(b), the "implausible" case, everyone can be made better off both by a movement from I to II and, if we moved to the II position,¹⁶ again from a movement from II to I.

If, however, we suppose that compensation payments cannot be arranged in these cases—the more realistic assumption—we are obliged to develop dual welfare criteria. For to put our faith in some single criterion based on hypothetical compensation—quite apart from the obvious ethical objections—leaves us with logical problems similar to those met with in the early contributions to the "new welfare economics." We could, of course, adopt a Scitovsky-type criterion—that gainers be able to compensate losers to move to II and at the same time that losers be unable to compensate gainers to remain at I—which, as already indicated, would provide guidance in cases 2(a) and 2(d) but would give no help in cases 2(b) and 2(c); 2(b) being contradictory because of negative welfare effects, 2(c) being inconclusive. A dual welfare criterion, on the other hand, one involving a compensation test plus a judgment about the distribution of welfare, enables us in all cases, as in batch comparisons, to reach conclusions in terms of social improvements (1) and (2).

Two possible dual welfare criteria, analogous with those of 1(b) and 1(c) in Section I, satisfaction of which would warrant a movement from I to II will now be considered:

Welfare Criterion 1: In a movement to II, gainers can over-compensate losers (though it may also be true that losers can over-compensate gainers to remain at I) plus a more equal distribution of welfare in the II position.

Welfare Criterion 2: Gainers cannot be compensated by losers to abandon II (though it may also be true that gainers cannot compensate losers to abandon I) plus a more equal distribution of welfare in the II position.

Consider the distribution clause first. Since some people are made better off and others made worse off by the introduction of the project under consideration we have to judge the resulting redistribution of wealth in the light of some ideal structure—let us say equality. It may be thought impossible to do this satisfactorily in every case since there

¹⁶ Case 2(b) throws up a further difference between these external-effect comparisons and the batch comparisons. In the latter sort of comparisons no ambiguity, or rather no apparent contradiction, can arise if compensation is actually paid.

will often be rich and poor in each of the opposing groups. Nonetheless, the *average* income of one of the two groups will almost certainly be higher than that of the other group, and—calling the former group the “rich” and the latter group the “poor”—the distribution proviso of each of these criteria is met if it is the poor who benefit from the external effects associated with the movement to II.¹⁷

For convenience we shall consider only those cases in which the poor gain from the movement to II, the rich being the losers. *OM* and *ON* consequently refer respectively to the maximum-payable and minimum-acceptable estimates of the poor group, while *O'M'* and *O'N'* measure respectively the maximum-payable and minimum-acceptable estimates of the rich group. This simplifying procedure does not, of course, place any limitation on the comprehensiveness of our welfare criteria in dealing with relevant possibilities, since we are unable to fulfill either of them unless the poor do in fact gain by the prospective change.

Adopting this procedure then, Welfare Criterion 1 is met by cases 2(a) and 2(b), while Welfare Criterion 2 is met by cases 2(a) and 2(c). Put otherwise, case 2(a) is acceptable by either of these welfare criteria, case 2(d) by neither of them, case 2(b) by Welfare Criterion 1 only and case 2(c) by Welfare Criterion 2 only. [Note that cases 1(a), 1(b), 1(c), and 1(d) fall into the same sort of pattern].

In order to appreciate the sense in which the fulfillment of these welfare criteria can be justified with reference to social improvements (1) and (2), let us consider them in connection with cases 2(b) and 2(c) each of which has no more than the characteristics necessary to meet the requirements of Welfare Criteria 1 and 2 respectively.

If the situation be that depicted in case 2(b) we may split the movement to II into two imaginary stages. In the first stage we imagine a movement to II with the gainers (the poor) being constrained to compensate the losers (the rich), thereby making everyone better off and realizing the (1) social improvement. In the second stage we “decompensate” the rich, compelling them to return to the poor the full amounts of the compensatory payments they received in the first stage. This meets the requirements of social improvement (2) since it promotes a more equal distribution of welfare. Inasmuch as it issues in both social improvements the movement to II is warranted in all those

¹⁷ It may occasionally happen that among the gainers are persons whose incomes are markedly higher than the incomes of any of the losers, and that among the losers are some very poor persons indeed. Though in these cases, in the event of a movement to II, we should very much like to compensate the very poor losers and tax the very rich gainers, we cannot build this requirement into our criteria without unnecessarily restricting their applicability. At all events, if gainers from the movement to II are *on the average* poorer than the losers, both before and after the change to II, then the movement to II necessarily realizes a more equal distribution of welfare as between the opposing groups.

cases, such as 2(b), which fulfill the requirements of Welfare Criterion 1.

Turning to the justification for Welfare Criterion 2, we begin by supposing that in case 2(c) society has already moved to II and a return to the *status quo ante* is being contemplated. By splitting this movement back to I into two imaginary stages we can show that society is made worse off by reference to both social improvements. In the first stage we move back to I and attempt to compensate the poor. But in case 2(c) the maximum the rich are able to pay falls short of the minimum acceptable to fully compensate the poor. It is possible, therefore, to redistribute this compensation in such a manner as to make everyone worse off in I than he was in II. This effected, we have achieved a social loss—the converse of social improvement(1). In the second stage we restore the *status quo ante*—the original I position—by returning to the rich their (inadequate) compensation payments exacted in the first stage. This makes the distribution of welfare less equal and therefore, by reference to (2), society is made yet worse off in returning to I. By reference to both (1) and (2), the movement from II to I is prohibited.¹⁸

III. *Reformulation and a Proposal for a Single Welfare Criterion*

As must be evident by now, the symmetry between external-effect comparisons and batch comparisons, though superficial, is very marked. This may appear an advantage in so far as it affords economy in schema: we may talk of the fulfillment of the Kaldor-Hicks test (though of the reversal test also) or of the nonfulfillment of the reversal test (though of the Kaldor-Hicks test also) in connection with either sort of comparison and thus comprehend respectively 1(b) or 1(c) and 2(b) or 2(c). With the proviso about distribution, we may conclude that these cases all sanction a movement to the new position. On the other hand, the use of the same terminology which the symmetry invites makes one impatient of the important distinctions between the two sorts of comparison; in particular the paradox in cases (b) and (c) arises for quite different reasons, as already indicated. If we wish to emphasize the distinction between welfare criteria applicable to batch comparisons and those applicable to external-effect comparisons we can make use of an alternative, though not unfamiliar, terminology

¹⁸ In other words, while the case for a movement from I to II is inconclusive, social improvement (2) being realized but not social improvement (1), if we had moved already to II, a return to I would be worse for society on both counts. Welfare Criterion 2, therefore, may not be regarded as quite so satisfactory as Welfare Criterion 1. Note, however, that the corresponding batch-comparison welfare criteria, which are met respectively by cases 1(c) and 1(b), are both equally satisfactory.

in dealing with the latter. The compensating variation (CV) as defined by Hicks [2] is a measure of the transfer of money income necessary to maintain the individual's welfare at his original level following some economic change. Thus the maximum that gainers from II (the poor) will pay in order to have the privilege of moving to II is the sum of their CV's. Again, however, the minimum amount of money that the losers in a movement to II (the rich) will accept in order to induce them to abandon I is the sum of their CV's also. Welfare Criterion 1 can therefore be reformulated to state, apropos a change to II involving external effects, that II is socially preferred to I if the algebraic sum of the CV's is positive¹⁹ and the distribution of welfare in II is more equal than it is in I—or, using the rich and poor categories, if the sum of the CV's of the poor exceed the sum of the CV's of the rich.

The equivalent variation (EV), on the other hand, has been defined [2] as that transfer which, in the absence of the change in question, affords the individual the equivalent change in his welfare. Thus, the minimum sum that gainers from II (the poor) will accept in order to induce them to forego the advantages of the movement to II is the sum of their EV's. Again, however, the maximum that losers from the movement to II (the rich) will pay to be spared the change to II is the sum of their EV's also. Welfare Criterion 2 can therefore be restated as follows: II is socially preferred to I if the algebraic sum of the EV's is negative and the distribution in II is more equal than it is in I—or, using the rich and poor categories, if the sum of the EV's of the poor exceed the sum of the EV's of the rich.

Let us now recall that case 2(b)—in which the project generating the external effect was an inferior good—was the implausible case, inasmuch as the maximum people were willing to pay for the project, or for its abandonment, exceeded the amount of money they would require as a minimum to compensate for their disappointment. If we could safely neglect such cases²⁰—and it is rather difficult to imagine such cases in connection with external effects—then case 2(b) would not arise.²¹ In that event, falling back on the normal case, if the gainers' maximum-payable estimate exceeded the losers' minimum-acceptable estimate— $OM > ON'$ —by some amount, x , then the minimum-accept-

¹⁹ Where amounts payable are taken as positive and amounts receivable as negative.

²⁰ Or, not to offend the empiricist, if we could ascertain in advance of all applications that, indeed, the minimum sum people would demand to forego a benefit exceeded the maximum sum they were prepared to pay for it, we could make do with Welfare Criterion 2 alone.

²¹ Notice, however, that in batch comparisons, case 1(b) is no less plausible than case 1(c). Indeed, in such comparisons welfare effects play no part, each batch of goods, at the margin, having the same relative valuations for each individual.

able estimate of the gainers would exceed the maximum-payable estimate of the losers— $ON > O'M'$ —by more than x , a situation depicted in case 2(a).

Case 2(a) may therefore be regarded as a stronger version of case 2(c), for in 2(a) the gainers (the poor) can actually compensate the losers (the rich) in a movement to II whereas it is only required by Welfare Criterion 2 that the rich cannot bribe them to desist from moving to II. Such being the case, we need employ only Welfare Criterion 2, the sum of the EV's of the poor exceed that of the rich, since this requirement is always less stringent than that of Welfare Criterion 1. Thus, if Welfare Criterion 2 is deemed satisfactory we can dispense with the other. If, for any reason, it is deemed unsatisfactory, we are still left with only one welfare criterion—a great simplification and one which, it should be noticed, cannot be extended to batch comparisons.

IV. *A Single Welfare Criterion for Variable External Effects*

The assumption of a "normal" response, or positive welfare effects in each group, having impelled us to choose either Welfare Criterion 1 or Welfare Criterion 2, we now outline their application to those cases in which people are no longer faced with an all-or-nothing choice—either I or II—but instead confront the possibility of continuous variation in the quantity of II. Both gainers and losers from a movement to *more of* II now conceive their maximum-payable and minimum-acceptable estimates in terms of schedules which vary with the amount of II that is introduced into the economy. Considering first the losers (the rich) from an increase of II, the height at any point of the solid line OM' in Figure 4 may be regarded as a first derivative with respect to the quantity of II) of the total amount payable as a maximum to abolish that amount of II; the area of triangle OSQ , for instance, represents the total amount payable as a maximum to be rid of OQ units of II. The broken line ON' , above OM' has properties similar to it but, instead, has reference to the minimum amount acceptable to the rich to tolerate increasing amounts of II. The curves of the gainers (the poor) are constructed on the same principle, the height under MB , as we move from left to right, measuring the maximum sum that gainers will pay for successive units of II. The height under ND , on the other hand, measures the minimum-acceptable sum necessary to induce the poor to forego successive units of II as we move from right to left.

Employing our Welfare Criterion 2, we require that the sum of the EV of the poor exceed the sum of the EV of the rich, a criterion which is met for any amount of II up to OQ . For, identifying the EV of the poor with the ND curve and the EV of the rich with the OM' curve,

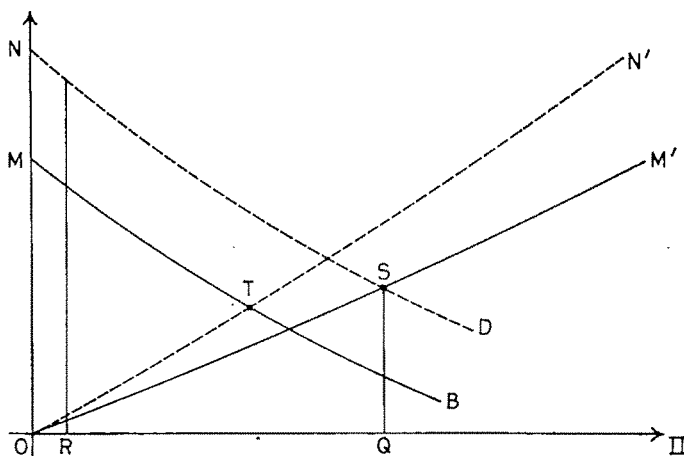


FIGURE 4

we can certainly sanction the first unit of II, say OR. By the same criterion the second unit of II is sanctioned, the third, the fourth, and so on until we have introduced the Q th unit. More of II than OQ cannot be sanctioned, for on units additional to OQ the EV of the poor do not exceed the EV of the rich.²²

At the end of our journey the picture begins to look somewhat familiar. The relevant schedules, ND for the gainers (the poor) and OM' for the losers (the rich) might, without straining concepts, be regarded respectively as representing the marginal social benefit and marginal social cost of the external effect in question. But we have had to do a good deal of sorting out before we could, with a clear conscience, select the relevant schedules in the light of the distribution proviso.²³

²² If we were unsatisfied with Welfare Criterion 2 and were compelled therefore to adopt Welfare Criterion 1 instead, a similar development of the argument would take us to point T in Figure 4.

²³ I have confined myself to an endeavor to formulate the questions to be asked when we are faced with problems involving external effects without going into the important practical question of how we might estimate the relevant sums. A technique for extracting reliable information to fill these categories may not be so hopeless a task as it might at first appear. It goes without saying that, for many projects involving widespread external effects, recourse must be had to sample surveys. As for interviewing people, while it is true that we cannot put them through a "truth machine," we might in some circumstances employ a ruse to reduce considerably the "error" in their estimates of gains or losses, one suggested by methods used on the London Stock Exchange. If the individual has no idea of whether he will be called upon to pay a sum of money or to receive one, and yet is constrained to keep his estimates of maximum-payable and minimum-acceptable, within a narrow margin—say 10 or 20 per cent—the more he cheats the greater the risk he incurs.

REFERENCES

1. J. R. HICKS, "The Valuation of the Social Income," *Economica*, May 1940, 7, (N.S.), 105-24.
2. —, "The Four Consumer's Surpluses," *Rev. Econ. Stud.*, Winter 1944, 11, 31-41.
3. R. G. LIPSEY AND K. LANCASTER, "The General Theory of Second Best," *Rev. Econ. Stud.*, Nov. 1956, 24, 11-32.
4. I. M. D. LITTLE, *A Critique of Welfare Economics*, 2nd ed. Oxford 1957.
5. E. J. MISHAN, "The Principle of Compensation Reconsidered," *Jour. Pol. Econ.*, Aug. 1952, 60, 312-22.
6. —, "Rent as a Measure of Welfare Change," *Am. Econ. Rev.*, June 1959, 49, 386-94.
7. —, "A Survey of Welfare Economics, 1939-1959," *Econ. Jour.*, June 1960, 70, 197-256.
8. T. SCITOVSKY, "A Note on Welfare Propositions in Economics," *Rev. Econ. Stud.*, Nov. 1941, 9, 77-88.
9. Royal Commission on Local Government in Greater London, 1957-60. Cmd. 1164. London 1960.

STOCHASTIC RESERVE LOSSES AND EXPANSION OF BANK CREDIT

By DANIEL ORR AND W. G. MELLON*

The exposition of the manner in which an individual bank expands credit as compared with the way this is done by the banking system as a whole has remained virtually unchanged since its first presentation by C. A. Phillips in 1920 [4, Pt. 1]. This exposition relies on a comparative static, deterministic analysis. Recently, important results have been obtained in other areas of economic theory through the incorporation of uncertainty into decision models: in this paper we explore the potential effects of uncertainty in the cash flows of banks on the expansion of bank credit. The analytic methods we use are similar to those successfully employed to determine low-cost inventory policies for business enterprises.¹

The approach we will take was noticed but not fully pursued by Edgeworth. He proposed to solve the problem of determining the optimal volume of bank credit by "operational gaming" [2, p. 120]:

I have imagined a new game of chance, which is played in this manner: each player receives a disposable fund of 100 counters, part of which he may invest in securities not immediately realizable, bearing say 5 per cent per ten minutes; another portion of the 100 may be held at call, bearing interest at 2 per cent per ten minutes; the remainder is kept in the hands of the player as a reserve against certain liabilities. The demand which he has to meet is thus regulated. From time to time . . . there are taken a certain number say 22 digits at random. . . . The sum of these digits constitutes the demand which the player has to meet. We need not consider the provision which is made to meet the average amount (99) of this demand. The special object of the reserve above mentioned is to provide against demands which exceed that average. If the player can meet this excess of demand with his funds in hand, well; but if not he must call in part, or all, of the sum placed at call, incurring a forfeit of 10 per cent on the amount called in. But if the demand is so great that he cannot even thus

*The authors are assistant professor of economics, Amherst College, and senior economic research analyst, The Chase Manhattan Bank. An earlier version of this paper appeared as a memorandum of the Econometric Research Program, Princeton University. Thanks are due to L. V. Chandler, W. J. Baumol, R. G. Davis, and Richard Singleton for helpful comments on that earlier draft, and to Arnold Colclery for valuable suggestions concerning this revision.

¹ Cf. [1, esp. Ch. 2]. As will be perceived from the following, we do not observe Knight's distinction between "risk" and "uncertainty."

meet it, then he incurs an enormous forfeit, say 100 pounds or 1000 pounds. . . . The player who wins the most interest wins the game, and is entitled to as many pence, or it may be shillings, as the number of counters he has won.

In the following pages we develop the treatment suggested by Edgeworth and explore its implications when extended to the banking system as a whole.

I. The Individual Bank

We first consider the effect of uncertainty upon credit expansion in the individual bank. A member of the Federal Reserve is subject to a legal reserve requirement which is a certain percentage of average deposits over some period. Failure to meet this requirement results in a money penalty, but perhaps more importantly, repeated failures are regarded as evidence of unsound banking practice.² Violations can be avoided by depositing the necessary reserves at the Federal Reserve (or since late 1960, by increasing vault cash holdings); money for this purpose may be obtained from correspondents' balances, or (at some out-of-pocket cost) from borrowing in the federal funds market, discounting at the Federal Reserve, or liquidating assets. Every dollar of reserves or near-reserves held in excess of the reserve requirement incurs an opportunity cost since the reserve balances earn no interest, nor does cash, and the excess reserves might have been profitably invested. Through its balance of long- and short-term security holdings, the individual bank in practice probably stays nearly "loaned up"; however, an analysis of bank portfolio selection is not part of the purpose of this paper.³ Accordingly, we assume that the bank's assets are either reserves or loans, and that some expense attends a conversion from the last to the first.

The bank is subject to a series of random withdrawals from and additions to its reserve and cash balances. Additions will arise from the deposit of checks drawn on other banks (the Federal Reserve float), certain transactions with the Federal Reserve and federal government, new cash deposits by the public, and the maturing of securities. Outflows arising from similar transactions will also be experienced. (Although treated here as random, these additions and withdrawals will naturally be affected by the bank's location, the profile

² Our formulation throughout assumes that banks are members of the Federal Reserve, but can be easily adapted to state banks or members of a banking system which operates with conventional reserves (Great Britain).

³ For a study of the portfolio selection problem which utilizes the same decision techniques as the present paper, see R. C. Porter, "A Model of Bank Portfolio Selection," Cowles Foundation Discussion Paper No. 88, Jan. 1960.

of its assets and liabilities, seasonal variation, and the general climate of business activity.)

The problem facing the profit-maximizing bank is: how far should credit be expanded, given the random nature of its cash flows and the reserve requirement it must meet. A simple static⁴ model enables us to deal with this problem. As is usual, we imagine a bank which is initially in equilibrium,⁵ then finds itself with excess reserves (possibly as a result of a deposit of cash from outside the banking system); we will compare the bank's response to these excess reserves under uncertainty to the response indicated by the traditional analysis.

The relevant variables of the model are:

R : the volume of excess reserves at the beginning of the evaluation period.

D : the volume of new deposit liabilities created during the period.

L : the loss of reserves during the period.

ρ : the legal reserve ratio. ($0 < \rho < 1$).

Reserves are legally sufficient if this inequality holds at the end of the evaluation period:⁶

$$(1) \quad R - L \geq \rho(D - L).$$

The objective of the bank is to extend new credit in a volume which will maximize its expected profits. The relationship of profit to credit policy is as follows: there is a positive return on credit extended, the net interest earned on new loans made during the period in response to the excess reserves on hand at the beginning of the

⁴Here, static means "one period." The present problem is unusually well suited to treatment in a static model because the dependency which usually exists between time periods (in a production model, for example, because this week's excess of production over sales goes into next week's beginning inventory) is virtually absent; in practice, reserve imbalances which arise in the current period are corrected in the current period, and costs associated with this imbalance are charged to the current period. The only visible inter-period carryover in practice results from the fact that a small deficit (not exceeding 2 per cent) may be made up in the following week. For simplicity, we ignore this fact.

⁵I.e., the bank's reserve holdings neither justify further extension of credit nor require contraction of credit.

⁶Actually, the Federal Reserve evaluates a bank's reserve position on the basis of average end-of-day reserves as compared to average end-of-day deposit liabilities over a period of one or two weeks. The valid criterion of adequacy is thus:

$$R - \sum_{j=1}^N (N+1-j)L_j/N \geq \sum_{j=1}^N (N+1-j)(D_j - L_j)/N$$

where the j subscripts denote days within the N -day averaging period. Our criterion (1), which is employed because it is easier to manipulate, will have the effect of *reducing* the impact of uncertainty upon the bank's extension of credit. If the daily cash flows are assumed independent of each other, the variance per day is $\text{Var}(L_j) = \text{Var}(L)/N$; if N is 9, say, the standard deviation of daily flows is 1/3 that for the entire period; hence the cumulative variability against which the bank must guard over the entire period is 9/3 or 3 times as great when the daily average criterion is used.

period. This is written iD , where i is the rate of interest on loans.⁷ This return is reduced by expected losses, resulting from the fact that an increase in the volume of loans will increase the probability that the bank will fall below its reserve requirement. This loss expression has two components: a lump-sum penalty, M , representing costs of paperwork and administration which are incurred when the reserve requirement is violated; and a penalty of r on each dollar of reserves which the bank is short. The expected value of these costs is given by the probability expressions:

$$(2) \quad M \int_0^\infty \phi(L) dL + r \int_0^\infty L \phi(L) dL$$

where $\phi(L)$ is the probability density function of L ; and

$$(3) \quad v = (R - \rho D)/(1 - \rho)$$

is the largest volume of cash outflow which can occur without causing a reserve deficit; (3) is obtained by treating (1) as an equality and solving for L . The total-profit function which the bank seeks to maximize is:

$$(4) \quad P = iD - M \int_0^\infty \phi(L) dL - r \int_0^\infty L \phi(L) dL.$$

A necessary condition for the optimality of a lending policy is that $\partial P / \partial D = 0$.

The effect of new reserves on the volume of new loans thus will depend on the way in which reserve losses vary when the level of deposits is changed. In the paper cited, Edgeworth discussed the application of the "laws of chance" to prediction of the cash flows to and from an individual bank. At the time he wrote, the normal distribution was held to be synonymous with these "laws," and his paper reflects the almost metaphysical properties then attributed to the normal function. Even without this bias in its favor, the normal distribution has a great deal of a priori appeal as a description of these flows. We will assume $\phi(L)$ is normal, with mean value linearly dependent on the level of new deposits created during the period,⁸ and variance which is independent of deposit liabilities. Thus we are assuming that cash flows in different periods are random and independent, and that the variability of cash flow activity is not significantly affected by small changes in the level of deposits.⁹

⁷This involves two simplifications: that all loans earn a uniform rate of interest, and that no provision is made for the fact that a dollar loaned at the beginning of the averaging period will earn more than one loaned at the end of the period.

⁸This is the exact parallel of the assumption of the traditional analysis that a fraction of new deposits will remain in the bank.

⁹The assumptions of stationary variance and independence which underlie our formula-

In the following, it will be convenient computationally to scale the magnitudes of each of our parameters and variables so that the standard deviation of $\Phi(L) = 1$. Thus, by our assumption,

$$\Phi(L) = N(kD, 1)$$

where k is a constant ($0 \leq k \leq 1$).

The dependence of the optimal credit expansion upon the uncertainty in L in our simple model is readily illustrated by numerical examples. Differentiating (4),¹⁰ the necessary condition for the optimal volume of new deposits is:

$$(5) \quad 0 = i + (M + rv)\phi(v) \frac{dv}{dD} - (Mk + rv)\phi(v) - r[1 - \Phi(v)].$$

Substituting for v and dv/dD from (3), we obtain:

$$(6) \quad 0 = i - \{r(R - \rho D)/(1 - \rho)^2 + M[k + \rho/(1 - \rho)]\}\phi[(R - \rho D)/(1 - \rho)] \\ - r\{1 - \Phi[(R - \rho D)/(1 - \rho)]\}$$

This expression must be solved for D . When numerical values are specified for the parameters M, r, i, ρ and k , and for the independent variable R , it is not difficult to obtain the optimal value of D by successive approximation, using tables of the normal density and distribution functions, and a desk calculator.

In Table 1 we compare the optimal value of D , obtained for various combinations of values of the cost parameters, to the optimal value (called D^*) which would be indicated by the traditional deterministic analysis. D^* is obtained in terms of R by solving the equations:

$$R - L = \rho(D - L)$$

$$L = kD.$$

Not surprisingly, we conclude that the magnitude of the effect of uncertainty in our model depends upon the size of the excess reserve compared to the variability of reserve losses, and the relative size of the cost components i, r , and M .

Our examples indicate some interesting changes in the presence of uncertainty. First, the ratio of marginal credit expansion to excess

tion are, of course, not realistic, even for short periods; we have noted the presence of seasonal variations, for example. However, since our concern is with the effect of random movements in L , it seems permissible, as a first approximation, to abstract from all regular movements it may contain. If we were concerned with large secular shifts in asset holdings, such as might occur in response to a change in reserve requirements, the formulation of cash flow variance as independent of the change in loans would be most inappropriate. This assumption, like the one discussed in note 9, is conservative, i.e., it reduces the impact of uncertainty upon the optimal volume of credit expansion.

¹⁰ See the Appendix.

TABLE 1*—OPTIMAL VALUES OF D UNDER UNCERTAINTY COMPARED
WITH TRADITIONAL VALUES (D^*)

Cases	M	r	i	k	R	D	D^*
1	20	.01	.0025	.7	10	8.9	13.2
2	20	.01	.0025	.7	1000	1311.	1316.
3	0	.01	.0025	.7	10	10.5	13.2
4	20	.01	.0025	.3	10	15.7	22.8
5	20	.5	.0025	.7	10	8.9	13.2
6	arbitrary	.01	.01+	.7	arbitrary	∞^b	13.2
7	20	.01	.0025	0	10	35.4	40 ^c

* The value $\rho = .2$ is used in all cases. D and D^* are to the nearest tenth except in case (2), when they are to the nearest unit.

^b when $i > r$ the expected value of an extra dollar of D is $i - r$. Hence, if M is finite, it will pay the bank to expand credit indefinitely, regardless of the value of M or k . This, of course, takes into account only the money gained, and ignores such nonquantified factors as reputation for soundness.

^c This corresponds to a monopoly bank's behavior, assuming that the population's liquidity preference does not change with changes in the money supply.

reserves will be less than total credit expansion to total reserves; this is probably consistent with observable behavior,¹¹ and it certainly invalidates any dismissal of cash-flow uncertainty as observably unimportant, based on the low level of excess reserves in the banking system. Uncertainty may have little impact upon total credit expansion, but great impact upon marginal credit changes, a result of some significance for monetary policy.

Second, it is observed from equation (6) that credit expansion is as sensitive to M , the lump-sum cost of ameliorating reserve shortages, as it is to the rate the bank earns on its marginal investments or loans. Thus, while low interest rates are an instrument of easy policy, they will also encourage the bank to use excess reserves as a hedge against uncertainty, unless they are accompanied by loosening of the regulations governing reserve shortages. (Of course, most of the excess reserves observed in periods of easy money and slow business activity may be attributed to another type of uncertainty, namely, uncertainty regarding repayment on loans.)

A major question regarding the validity of our quantitative results stems from having ignored the effects of short-term investment opportunities, and the federal funds market. Case 3 of Table 1 is intended, by contrast with case 1, to give some idea of the offsetting effects of greater liquidity realizable through short-term investment

¹¹ In the case of large city banks, the divergence between these total and marginal ratios may be more a result of the desirability of operating in the federal funds market with large sums, rather than of the presence of uncertainty regarding cash flows.

opportunities. The federal funds market is likely to prove significant to the operations of only a few of the largest banks; according to a study made over a period of a month by the Federal Reserve in 1957 [3] about 150 banks participated in the federal funds market (some infrequently); for these banks, average daily purchases of federal funds were about the same as average daily borrowing from the Federal Reserve, and slightly larger than average idle reserves.

Thus, while highly liquid investment opportunities and the federal funds market reduce the impact of uncertainty, it is not clear that they are sufficient to completely eliminate its effect in all banks, because of occasional unattractive earning rates in the former, and the necessity to deal in large sums in the latter.

II. *Credit Expansion in the Banking System*

The interest of the economist has never been centered on the expansion of credit by the individual bank, but rather on credit expansion within the banking system: on the analysis of the deposit-creation multiplier. In the traditional analysis, systemwide credit expansion is given by R/ρ if reserve losses to the public's cash holdings are assumed to be zero, and credit expansion is defined as the total addition to deposit liabilities. The volume of credit created is here independent of the amount of the loan which remains in the first bank, and in fact, of all interbank reserve flows. For this reason, the assumption of a monopoly bank has been a convenient short-cut in the study of systemwide expansion; in case 7 of Table 1 we have shown how uncertainty would affect the performance of a monopoly bank. Uncertainty has one major consequence for the systemwide expansion of credit: when there are many banks in the system, the amount of credit expansion in response to a given initial amount of excess reserves will be different from what it would be with a monopoly bank. If we assume that the distribution $\phi(L)$ for each bank is independent of the distribution for all other banks, the variation in the flows of the monopoly bank will be measured by a standard deviation σ_s , the square root of the systemwide variance, whereas each bank in the n -bank system will face a standard deviation equal to (on the average) σ_s/\sqrt{n} , since under our assumption, the variances for the individual banks are additive. Thus, the aggregate variability against which the system's banks must protect themselves is increased by a factor of (at most) \sqrt{n} in the non-monopoly case.

Furthermore, the total expansion of credit will be affected by the way in which new reserves are initially distributed among the banks, and the way in which the subsequent interbank reserve flows take

now, although it is possible to fill in some of the details from surviving correspondence, there is much that remains to be explained.

There were many precedents to guide the founders of a loose, semiformal social body like the (U.S.) Political Economy Club, for it was an organization appropriate to a period when there were but a few full-time economists mainly located on or near the Eastern seaboard, many of whom already knew each other personally. As English economic ideas still dominated the American scene, the venerable Political Economy Club of London, founded in 1821, afforded an obvious model. At least two members of the American group, Horace White and Hugh McCulloch, had attended its meetings in London, and the latter had been a member from 1874 to 1879.⁴ Moreover, the similarity between the two groups was more than superficial. In each case the founders were "men with distinct opinions which they desired to see prevail. They wanted to overthrow laws which they believed to be mischievous. They desired freedom of trade. The object of the Club was not purely scientific or critical. It had distinctly practical aims. . . . Not that they were by any means all of one mind."⁵ No existing organization could effectively meet the members' needs for closer contact and mutual stimulus. The American Statistical Association was too specialized, while the American Social Science Association and the American Association for the Advancement of Science were too diffuse and unwieldy. And there was, as yet, no precedent for an economic organization such as the American Economic Association which ostensibly had professional and scholarly objectives and yet was neither a closed society of scholars nor a private club. Hence the Political Economy Club might have proved to be the seed from which the American Economic Association grew, for there is evidence that two members of the club, F. A. Walker and R. T. Ely, who subsequently became the first President and Secretary of the new Association, entertained the idea of "asserting ourselves aggressively" within the Political Economy Club as an alternative to launching an entirely new organization.⁶ It is, therefore, worth examining the Club's history not only because it sheds additional light on the difference between the "old" and "new" schools of economics, but also because its failure helps to explain why the A.E.A. succeeded.

The earliest reference to the proposal to form an economists' club appears in a letter, dated April 11, 1882,⁷ from J. L. Laughlin, then

⁴ See [22, p. 311 and n.]. For 18th century economic clubs see [11, p. x].

⁵ From reminiscences by Sir J. MacDonnell [22, pp. 338-39].

⁶ Unfortunately only one passing reference to this possibility has survived. See F. A. Walker to R. T. Ely [8, April 30, 1884].

⁷ After commenting on one of Atkinson's papers, Laughlin remarked [2]; "It has often occurred to me that we ought to have a Congress of American economists at least once a

instructor in political economy at Harvard, to Edward Atkinson, the prominent Boston businessman and popular writer on economic subjects. The project did not, however, begin to take shape until the following year, for on January 29, 1883, Laughlin again wrote to Atkinson [2]:⁸

The matter of the "American Society of Political Economy" (?) has been simmering in my mind, and I have now thought it worth proposing some plan. As you say, "bores" must be excluded. So, it seems best to approach a few of the leading economists first, taking a small number, and then their collective wisdom can be used in regard to further elections. It ought to be made a dignified body, for it can be authoritative and useful in many ways. It could encourage economic studies by offering prizes, as in France, for work which deserves it well, and propose many subjects affecting our own country for which it offers honorable rewards. There is danger that it may engender the spirit of a clique; but this can be avoided largely by the selection of men.

I venture to mention some such names as the following, to start with: 1. Simon Newcomb, Washington [Professor of Mathematics in the U.S. Navy]; 2. Chas. F. Dunbar, Cambridge [Professor of Political Economy, Harvard]; 3. Edward Atkinson, Boston; 4. Francis A. Walker, Boston [President of M.I.T.]; 5. J. Laurence Laughlin, Cambridge; 6. William G. Sumner, New Haven [Professor of Political and Social Science at Yale]; 7. Arthur Latham Perry, Williamstown [Professor of Political Economy and History at Williams]; 8. David A. Wells, Norwich, Conn. [economist, businessman]; 9. Carl Schurz, New York [statesman, journalist and political philosopher]; 10. Andrew D. White, Ithaca, New York [President of Cornell, lately Minister to Germany].

How does this list strike you? It is capable of extension, but perhaps that had better be deferred. If it seems good, why not yourself mention the matter to Gen. Walker—or, if you prefer, I can. Then I suggest the printing of a small statement with your name, Gen. Walker's, and my own, to be sent to the others here mentioned asking for their co-operation. I am willing to draw up a sketch for the approval of yourself and Gen. Walker, before being sent out. You and he are both busy men, and I can relieve you of the correspondence, at present at least. As soon as answers are received, a date can be fixed for a meeting and organization.

The "bogus" economists in Washington headed by John C. New who

year for discussion of such questions. There is Gen. Walker, Prof. Sumner, Prof. Dunbar, Prof. Perry, Simon Newcomb, etc., etc.—a very good band of immortals to begin with. We might, too, have some influence as a body on economic questions in this country. How does the idea strike you?"

⁸ John C. New, Indiana lawyer, banker, newspaper editor and prominent Republican, had been U.S. Treasurer from 1875-76, and was Assistant Secretary of the Treasury from 1882-84. Cf. [21, v. 4, p. 500]. There seems to be no record of his "American Association of Economists."

place,¹² a fact ignored both in the literature and in the administration of credit policy. This further complicates an issue over the way monetary policy is conducted: Ira O. Scott has pointed out that delays in the effectiveness of open-market operations could be considerably reduced by decentralizing the securities market [5]; presumably, dispersal of the purchase of securities would lead to a more rapid filtration of excess reserves through the banking system, and hence to a swifter and geographically more homogeneous expansion of loans. On the other hand, our analysis suggests that the volume of securities bought must be much greater to obtain a given expansion in the money supply if this decentralization is effected.

Results regarding systemwide credit expansion in the nonmonopoly case are difficult to obtain, except under artificial assumptions. It is possible, assuming all banks are confronted by the same cost parameters, and that variances of L are independent between banks, to place bounds on the systemwide impact of uncertainty: the effect of uncertainty will be minimized at the monopoly bank extreme, and maximized when each bank of the system generates $1/n$ of the systemwide variability, receives $1/n$ of the excess reserves at the beginning of the deposit creation process, and experiences identical reserve flows on subsequent rounds of the credit expansion process.

For a numerical illustration of the maximal and minimal effects of uncertainty upon systemwide expansion, we will deal with case 7 of Table 1. With a monopoly bank, 35.4 units of D will be created in response to 10 units of R . Suppose now the system comprises four banks, identical in every respect, and each bank receives 2.5 units of R . If the systemwide reserve-loss standard deviation $\sigma_s = 1$, the standard deviation of reserve losses for each individual bank is $1/2$. By the necessary condition (6), assuming $k = 0$ for the individual banks,¹³

$0 = .0025 - (.03906 - .003125D) \phi(3.125 - .25D) - .01 [1 - \Phi(3.125 - .25D)]$ which gives $D = 5.5$ for each of the four banks.

Thus, the volume of new deposits created in a four-bank system will, in response to ten units of excess reserves, be somewhere between a maximum of 35.4 and a minimum of 22. This is in contrast to the 40 which will be created according to the standard assumptions. As the number of banks which participate in the deposit creation process is increased, the minimum bound on expansion is lowered.

¹² For example, suppose 1000 units of R are placed with one bank: the first round D is 1311, according to case 2 of Table 1. If this 1000 is divided equally among 100 different banks, the first-round expansion is 890, as seen in case 1 of Table 1.

¹³ Setting $k = 0$ is equivalent to the previous assumptions that the system's banks are identical: by these assumptions, the expected value of the reserve outflow from Bank A would be the same as the expected value of reserves flowing into Bank A from the system's other banks; this is in effect a zero expected value of flows from A.

III. *Conclusion*

Edgeworth's lead regarding the possible effects of stochastic cash flows upon the deposit-creation process has thus far been almost completely ignored by economists. Two reasons may be suggested for this: either it has been the prevailing feeling that this type of uncertainty is not significant in determining the way banks respond to excess reserves, or it was because there was no way to solve such problems until the recent developments in decision theory used in this paper. The results here presented strongly suggest that the first attitude is not tenable. Apart from the initial assumption regarding the homogeneity of nonreserve assets, our assumptions have been made conservatively; whenever computational difficulties threatened, we have simplified in a way that would understate the impact of uncertainty upon bank-credit policy.

Ultimately, an appraisal of whether uncertainty in the demand for cash should play a significant role in our view of the banking system must be made empirically. As we have tried to show in this exploratory paper, this type of uncertainty may well have effects outside the domain of portfolio selection; it could conceivably alter our views regarding the proper conduct of monetary policy, and even cause us to qualify our time-honored description of how the banking system creates money.

Because our assumptions regarding portfolio alternatives are restrictive, and because it is difficult to quantitatively appraise their effect, our conclusions must remain tentative. And while these assumptions may be misleading, given the present structure of interest rates, rates which have existed in the past could have led to excess reserve positions even more extreme than those shown in our examples, for reasons which our analysis in part explains.

APPENDIX

The First-Order Maximum Conditions

Differentiating the loss function,

$$(4) \quad P = iD - M \int_0^{\infty} \phi(L) dL - r \int_0^{\infty} L\phi(L) dL$$

we obtain

$$(4a) \quad 0 = i - M \int_0^{\infty} \frac{\partial \phi(L)}{\partial D} dL + (rv + M)\phi(v) \frac{dv}{dD} - r \int_0^{\infty} L \frac{\partial \phi(L)}{\partial D} dL$$

as our first-order maximum condition. Notice, however, that

$$\phi(L) = (2\pi)^{-1/2} \exp [-(L - kD)^2/2]$$

and

$$\partial\phi(L)/\partial D = k(L - kD)\phi(L).$$

If we rewrite the second term of (4a) in the form

$$+ Mk \int_0^\infty -(L - kD)\phi(L)dL$$

it is seen immediately that this term is equivalent to

$$Mk\phi(L) \Big]_0^\infty = - Mk\phi(v).$$

The fourth term may be integrated by parts: let $x=\phi(L)$ and $y=L$ in the formula

$$\int ydx = xy - \int xdy.$$

The expression

$$+ r \int_0^\infty -(L - kD)L\phi(L)dL$$

is seen to be equivalent to

$$r \left[-v\phi(v) - \int_0^\infty \phi(v)dv \right].$$

With the integrals of (4a) thus evaluated, we obtain

$$(5) \quad 0 = i + (rv + M)\phi(v) \frac{dv}{dD} - (Mk + rv)\phi(v) - r[1 - \Phi(v)].$$

REFERENCES

1. K. J. ARROW, SAMUEL KARLIN and HERBERT SCARF, *Studies in the Mathematical Theory of Inventory and Production*. Stanford 1958.
2. F. Y. EDGEWORTH, "The Mathematical Theory of Banking," *Jour. Royal Stat. Soc.*, 1888, 51, 113-27.
3. D. M. NICHOLS, "The Federal Funds Market," *Business Conditions*, Federal Reserve Bank of Chicago, Jan. 1958, pp. 11-16; reprinted in L. Ritter, *Money and Economic Activity*, Boston 1961.
4. C. A. PHILLIPS, *Bank Credit*. New York 1920.
5. I. O. SCOTT, "The Regional Impact of Monetary Policy," *Quart. Jour. Econ.*, May 1955, 69, 269-84.

THE POLITICAL ECONOMY CLUB: A NEGLECTED EPISODE IN AMERICAN ECONOMIC THOUGHT¹

By A. W. COATS*

During the decade of the 1880's, more striking new departures occurred in American economics than in any other comparable period. At that time the conflict between the established Ricardian *laissez-faire* orthodoxy and the newly imported German historical ideas reached its climax; a wave of public interest in economic problems provided the opportunity for several able young men—who came to dominate American economics for the next three or four decades—to obtain their first professorial appointments; the academic economists, as a body, slowly but surely divested themselves of the accumulated propaganda and theological trappings of their subject, and secured its recognition as the leading independent social science discipline; the first professional economic journals appeared, and the foundation of the American Economic Association on September 9, 1885, approximately the mid-point of the decade, symbolized the birth of an indigenous national tradition of economic scholarship.²

Although the concluding stages of this long period of gestation have repeatedly been subjected to close scrutiny, the process is intrinsically so interesting that it would be unwise to neglect any new evidence which has a bearing on it. Earlier students have examined in detail the American Economic Association and its immediate precursor, the abortive Society for the Study of National Economy.³ But the Political Economy Club, which constituted the nucleus of orthodox opposition to the A.E.A. during its precarious formative stage, has hitherto been shrouded in mystery owing to the paucity of significant evidence. Even

* The author is lecturer in economic and social history at the University of Nottingham, England.

¹ This article is a by-product of research into the history of American economic thought undertaken in 1958-59 with the aid of a Rockefeller Foundation fellowship. I am indebted to Joseph Dorfman of Columbia University for his criticism and correction of an earlier draft, and to various other persons, too numerous to specify, who have responded to requests for information.

² The principal sources on these matters are cited in my article "The First Two Decades of the American Economic Association" [4]. Among those who attained full-time professional status as economists in the 1880's were: H. C. Adams, E. B. Andrews, R. T. Ely, H. W. Farnam, A. T. Hadley, E. J. James, J. L. Laughlin, S. N. Patten, E. R. A. Seligman and F. W. Taussig.

³ See especially [5, Ch. 2] [7, pp. 133-35, 296-99].

organized as "The American Association of Economists" suggested that we were none too early in thinking of such a scheme. Then, too, with some unity of action and support, it might be possible to establish a decent journal devoted to economic and financial subjects—some time in the future, perhaps. We need to be stimulated and to get an interchange of ideas, as much as any other body of scholars, and our meetings ought to bring out good work.

If you and Gen. Walker approve, let me know—or any new plan—and I will go on to prepare a statement.

A marginal note at the top of this letter indicates that it was forwarded to Walker; but no further developments occurred until November 1883, when definite plans were made to hold the inaugural meeting in New York, at the home of Horace White, editor of the *New York Evening Post*. Laughlin described the objectives of the Club more explicitly in his invitation to Simon Newcomb:

A few of us have suggested the plan of an organization of the political Economists of the country for conference, for discussion, for mutual stimulus, for encouragement of the study in the proper scientific spirit by others, and for various objects easily recognized as the aims of such a body. No plan as yet exists, but it is proposed to gather around a dinner table in New York or Boston about the 30th inst. to discuss the question, and, if we think best, to bring the young infant into the world.

We want your presence and cooperation, and should be greatly disappointed if the time was an inconvenient one for you. Please name another date when you might come, in case of a disagreement on the 30th.⁹

When Newcomb indicated his readiness to attend and participate in the Club, Laughlin despatched a list of members containing two significant additions: "Two protectionists have been invited," he observed, "Thompson and Hamlin, so that it shall not be regarded as a meeting of a clique from the beginning. It should have a scientific object, and not be the tone of any one set, I take it."¹⁰ But despite Laughlin's good intentions, most members of the public regarded economists as advocates of either free trade or protection, and the Political Economy Club, like its predecessor in London, rapidly acquired the reputation of being a free trade clique. Nor was this reputation wholly undeserved. There is no evidence that either Thomp-

⁹ [16, Nov. 11, 1883.] Newcomb was one of America's foremost scientists and a prominent writer on economics. See also Laughlin to Atkinson, Nov. 11, 1883 [2].

¹⁰ [16, Nov. 26, 1883.] Robert Ellis Thompson, Professor of Social Science at the University of Pennsylvania and first Dean of the Wharton School of Finance and Commerce, was one of the best-known disciples of Henry C. Carey. Cyrus Hamlin, President of Middlebury College, Vermont, sometimes lectured on free trade and protection [21, v. 3, p. 66]. At this time neither Thompson nor Hamlin had indicated his willingness to attend. Cf. Laughlin to Atkinson, Nov. 23, 1883 [2].

son or Hamlin ever attended;¹¹ several prominent members were actively engaged in free trade propaganda; and the majority supported the Cleveland ticket in 1884 and the tariff reform movement of 1886.¹² With this bias in its membership, Laughlin's hope that the Club would be scientific and nonpartisan was unlikely to be fulfilled, and an indication of the kind of difficulties he encountered is provided by the correspondence relating to the selection of a topic for the December 1884 meeting.

This correspondence opens with a letter to Laughlin from Horace White stating that he and Wells had selected as the topic for the next discussion:

What ought to be the policy of the Democratic Party with regard to the tariff? This is not the question tentatively considered at the last meeting, but both Wells and myself consider it far better than an academic discussion of the effect of machinery on wages. [16, Nov. 25, 1884]

At this, Laughlin, the secretary of the Club, forwarded White's letter to Newcomb, the president, with the following comment:

There are two things I do not like in it. First, White's letter seems to imply that a topic was chosen by the Club, viz.: "Effect of machinery on wages," but that Wells and he chose to over-rule the Club by making another choice. Second, it seems to me that the word "academic" in the letter has a good deal of meaning as touching the future of our Club. The one who regards a discussion of principles as "academic" will not further the progress of our science. And as economists we ought to meet this tendency at once, gently but firmly. We certainly do not intend our Club for a political organ in the sole interest of free trade. I think it would be very undignified for a Club of professed economists to talk at their dinner of the policy of the Democratic party. Free trade is not the whole of P.E. by any means, however much it may now interest us as a political question.

It seems to me, therefore, we ought to gently repress the tendency to make our Club a body for free trade agitation as (I think) Wells and White would have it; and point it steadily to discuss the really difficult

¹¹ Thompson may have attended, for his name appears on a printed list of members dated 1887 in the Ely papers, a list which includes the name of his University of Pennsylvania colleague, E. J. James. Moreover, as late as March 28, 1888, Thompson wrote to H. W. Farnam of Yale expressing regret at his inability to attend a forthcoming meeting [9].

¹² David A. Wells, the most active proponent of free trade in the Club, has been called "the man who would gladly have played the role of Richard Cobden in America." See [13, p. 203]. Wells had joined with White and Atkinson to form the American Free Trade League in 1869, and he played the leading role in the League's offspring, the Society for Political Education, formed in 1879, whose members included Sumner, C. F. Adams and White. (By this time Atkinson had dropped out.) Wells' *Primer of Tariff Reform* [18] may have played a decisive part in the campaign of 1884. See [13, pp. 117-18, 142, 147-48. Cf. 15, pp. 156-58, 280-82].

and unsettled question in P.E. wh. all recognize as important in their effect on the whole fabric of our science. I do not mean that we should never talk politics informally; but I object to any such formal declaration in a fixed subject, as a deflection of the trust reposed in us for the furtherance of the study of P.E. [16, Nov. 30, 1884]

Newcomb's reply disclosed his sympathy towards Laughlin's view, and also revealed some of the personal factors involved. Recalling his impression that all the members but Sumner had agreed to the "effect of modern improvements upon the economic interests of the labouring classes" as the topic for debate, he added: "I also perfectly remember Professor Sumner's objection to it which was that there was nothing to say about it except that if any class of men were not able to adapt themselves to the advance of the age they would get left." Newcomb conceded that White and Wells might possibly have been asked to select a subject, and commented, with reference to it, that he

would hesitate to criticize the conclusions of men so much better acquainted with the world than I am were it not that persons with very little knowledge can sometimes make valuable suggestions. Now it strikes me that if it should get into public prints that our Club has undertaken to discuss the proper policy of the Democratic party the unholy paragrapher would poke fun at us over the whole land and Messrs. Randall, Carlisle and Co. would enjoy the fun of seeing him do it [16, Dec. 1, 1884].¹³

In his reply to Laughlin, White explained that the original topic had been changed because

there was a great deal of opposition to it, chiefly in the part of Prof. Sumner. It was this opposition as well as the indefiniteness of the proposed topic which led me to think of putting up a question having more relation to the current dissensions of the press and of Congress. The English and French societies of economists take up questions relating to party politics, and I don't see why we may not. If we exclude all such questions we shall narrow our field very much.

However, I am not tenacious. You might put both questions in the paper . . . and then leave the society to take one or the other or both. [16, Dec. 4, 1884]

In fact, the combined influence of the secretary and president prevailed, and White was advised to propose his topic for debate on a subsequent occasion. But despite its temporary ascendancy, the academic interpretation of the Club's role did not remain unchallenged. Edward

¹³ Newcomb was evidently referring to Samuel J. Randall, leader of the Democratic protectionists in the House of Representatives, and John G. Carlisle, Speaker of the House, who was a mild, low-tariff reformer. See Nevins [15, Ch. 17]. His reference suggests that the Club's activities might already have been known in political circles.

Atkinson, who occasionally entertained the members at his home with a dinner cooked in his beloved Alladin oven, also hoped that their activities would not be confined to scholarly disputation, and in 1888 he informed Laughlin that, in reply to some circulars he had despatched, "very pleasant responses" had been received "from some of our members on the proposition to make the Political Economy Club a little more of a force" [2, Nov. 15, 1888].¹⁴ Atkinson's exact intention is unknown; but it is unlikely that he proposed to make the Club an organ of doctrinaire free trade opinion, for he regarded himself as one of the "lawless, outside, free lances on Economic Questions. . . . I don't like the 'Socialists of the Chair' or the 'Economists of the Closet,'"¹⁵ and had withdrawn from the free trade clubs in 1887 in order to promote moderate tariff reform, partly because of his position in the business community and partly "because I dislike and disapprove of the methods of the *doctrinaire* free traders as much as I do those of the intolerant protectionists."¹⁶

Atkinson's scheme was probably rejected, for the control of the Club's affairs remained in the hands of the academic members. As early as December 1884 Newcomb expressed the opinion that the president should be elected annually by ballot, adding that "I feel a great deal of diffidence in presiding in the presence of such men as Wells, White and Sumner";¹⁷ yet three years later his proposal to resign was unanimously rejected because, as Laughlin put it, "we are only too glad to have a double star at the head of our constellation to give up the chance so easily. Your reign is undisputed."¹⁸

Laughlin's desire to preserve the Club's original character and function also explains his action in January 1888 when, as a result of the breakdown of his health and his sudden departure for Santo Domingo, he unceremoniously unloaded the secretarial duties on H. W. Farnam of Yale.¹⁹ Farnam shared Laughlin's sentiments, and consequently

¹⁴ His Alladin oven is described in Harold F. Williamson's book [19, pp. 231-34].

¹⁵ Atkinson to Richmond Mayo-Smith [2, June 16, 1890].

¹⁶ Atkinson to Charles Nordhoff [2, June 1, 1885]. On another occasion he wrote to David A. Wells: "I think that the method adopted, of which Professors Perry and Sumner are the chief exponents, has done more to perpetuate a high tariff than have all the advocates of that system put together. When they lead people to think there is a profit in protection in excess of freedom they excite every unreasoning man to try to get a share of this profit" [2, Aug. 5, 1886]. Cf. [19, pp. 91-93, 135].

¹⁷ Newcomb to Laughlin [16, Dec. 1, 1884].

¹⁸ Laughlin to Newcomb [16, Dec. 31, 1887].

¹⁹ Laughlin to Farnam, Jan. 31, 1888, and Mar. 28, 1888 [9]. On Feb. 29, 1888 Farnam informed Horace White of Laughlin's sudden departure and referred to Laughlin's note "which may be taken, I presume, to be his last will and testament, and in which he constituted me his sole heir and legatee in the Secretaryship of the Political Economy Club." Farnam added that this seemed inconsistent with the Club's principles and with the members' belief that "public office is a public trust," but that in the emergency he was prepared

when Atkinson suggested that the Club should engage in publication Farnam demurred, on the grounds that its purpose was "mainly social" and that most of its members were relieved to belong to a body which did not exact that toll.²⁰ Laughlin's illness was only temporary, and he appears to have resumed his secretaryship in 1889, when Farnam went on an extended trip abroad.

This effort to preserve the Club's character by maintaining the continuity of its management is curiously reminiscent of the early history of its chief rival, the American Economic Association, whose first president and secretary, F. A. Walker and R. T. Ely respectively, were retained in office for seven years. In the latter instance the principal motive was fear of outside intervention which might lead to control by the "old school" economists; whereas, in the case of a closed society like the Political Economy Club, the threat necessarily came from within. Yet the very diversity of the Club's membership, which was at first almost evenly divided among professors, businessmen and journalists, proved to be the main safeguard, for once it had been launched as a private dining club no single group was strong enough to divert it into another channel. Admittedly, the older generation of economists consisted mainly of "practical" men who demonstrated comparatively little interest in theoretical problems, and who believed that their principles were directly applicable to current practice. But there was a variety of organizations especially designed and better equipped to engage in politico-economic propaganda; and by December 1884 the Political Economy Club's membership included a strong contingent of young scholars whose divergent views on policy matters may have combined with their interest in broad questions of principle to keep it on the straight and narrow path of informal debate.²¹

The most significant feature of this expanded membership is the inclusion of such outspoken critics of the older generation of economists as H. C. Adams, R. T. Ely, and E. J. James, who were instrumental in forming the association that eventually supplanted Laughlin's club

to act "ultra vires." In his letter of March 28th Laughlin apologized for his precipitate action saying that without Farnam the Club "would have been dinnerless and abandoned to the storm of tariff discussion without a guide."

²⁰ Farnam to Atkinson [9, Jan. 9, 1889].

²¹ A list of members dated Dec. 30, 1884 included the following additional academic representatives: H. C. Adams, J. H. Canfield, R. T. Ely, H. W. Farnam, A. T. Hadley, E. J. James, A. L. Perry, R. Mayo-Smith. By 1887, A. L. Chapin, J. F. Colby and S. Macvane were also members, and E. R. A. Seligman joined early in 1888. (In some cases, e.g., Canfield, membership was purely nominal.) The 1887 list included the following nonacademic members: M. B. Anderson (President, University of Rochester); H. C. Burchard (Director of the Mint); W. C. Ford (Chief of Statistics Bureau, Department of State); E. L. Godkin (Editor of the N.Y. Nation); A. S. Hewitt (ironmaster, later Mayor of New York); J. J. Knox (banker, former Comptroller of the Currency); M. Marble (newspaper editor); W. Minot, Jr.; and H. Villard (railroad promoter, financier).

and caused its decline. The presence of these up-and-coming young radicals in a body that has usually been regarded as the last bastion of the doctrinal establishment is eloquent testimony to the genuineness of Laughlin's professed desire to form a representative, scientific organization. It also provides an early example of the catholicity that subsequently impelled him, despite his own extreme conservatism, to include in his department at the University of Chicago such unorthodox colleagues as Davenport, Hoxie, Mitchell and Veblen.²² Unfortunately there is little available information concerning the relations between members of the "old" and "new" schools of economics in the Political Economy Club, for it seems that the leading spokesmen for the younger generation only infrequently attended its meetings. Henry Carter Adams, for example, attended but once in April 1888 and again in April 1890, although the second occasion appears to have been convivial, for he told his mother:

I had a headache most all day yesterday, perhaps it was on account of a dinner I went to of the "Economy Club" at Prof. Simon Newcomb's . . . I cared most to see the Hon. Hugh McCulloch; who was at the heart of the banking system during the war, and who has twice been Secretary of the Treasury. He is not a *great* man in the sense that he is a great fighter; but he has been a very useful public servant, one that has been and is an honor to the country.²³

By this time Adams was at the outset of his long and fruitful career as chief statistician to the Interstate Commerce Commission; moreover his even-tempered disposition, as well as his experience, must have helped him to enjoy and profit from the company of his elders. The inclusion of Ely, however, is particularly surprising, for he was the most hostile critic of economic orthodoxy, who subsequently became Laughlin's *bête noire* and he was profoundly suspicious of some members of the older generation. It is, however, doubtful whether he ever appeared at the Club's gatherings before 1892, for Farnam, who attended regularly and sometimes acted as host, did not meet Ely until the crucial Chautauqua meeting of the American Economic Association in that year.²⁴ E. J. James, also repeatedly clashed with his fellow clubmen in print, and probably in person; and when F. A. Walker invited Newcomb to a meeting at his house in 1888 he took the precaution of adding that "Dr. James is *not* to be here; so there will be no danger of

²² Cf. [3, p. 94]. It is doubtful whether the seminal influence of this conflict of views and personalities has been fully recognized. Not only was Chicago the battleground, both literally and figuratively, between the contending forces of Eastern conservatism and Midwestern radicalism; but in addition, Laughlin was the original of the caricature of the typical orthodox economist at whom the young "institutionalists" directed their shafts.

²³ H. C. Adams to Mrs. E. D. Adams [1, Apr. 14, 1890].

²⁴ Farnam to E. R. A. Seligman [9, June 5, 1892].

a riot."²⁵ Walker, himself, occupied a somewhat uneasy intermediate position between the two contending parties, for he was both a distinguished representative of the older generation and the leader and sympathetic supporter of the "new school." His heterodox monetary views brought him into conflict with other Club members over the question of bimetallism, and the following complaint to Farnam indicates that his arguments with his more orthodox clubmates were sometimes frustrating:

I wish that half a dozen of us, representing different views of the subject, could get together sometime, without an Atkinson, without a Laughlin, and without a Horace White! and see exactly how far we agree and in precisely what we differ. Qualitatively, I think we should differ but little; and I am disposed to think that we could reach something like a rude approximation to quantitative statements of the elements involved.²⁶

This letter suggests how difficult it was to get an impartial, scientific discussion of technical and contentious policy questions in a small, close-knit body like the Political Economy Club. Its gatherings were so intimate and personal that it was easy for men of forceful character and decided opinions, like Sumner, Wells, and White, to dominate its proceedings. Although Laughlin managed to prevent the Club from degenerating into a mere propaganda agency, his attempt to confine its attention to questions of principle proved unsuccessful.²⁷ The older generation of economists were, for the most part, practical men, who were experienced in public affairs but who usually lacked sound professional training in economics. They were "commanding men"—as A. T. Hadley, a conservative member of the younger generation, once admiringly remarked—who regarded economics as a body of concrete propositions from which definite, explicit policy conclusions could be drawn.²⁸

²⁵ Walker to Newcomb [16, Dec. 22, 1888]. For James' clash with Newcomb, see [12]. These exchanges initiated the *Science* economic discussion in the following year. For a later clash between James and Atkinson, see Atkinson to James [2, Sept. 30, Oct. 14, and Oct. 20, 1887].

²⁶ Walker to Farnam [9, Sept. 17, 1896]. Laughlin may have been referring to the same kind of difficulty when he pressed Newcomb to attend a meeting at New Haven. "The new organization at Saratoga [i.e., the A.E.A.] will no doubt be discussed in our Club, and our objects may be defined. Be sure and come. We need your 'scientific method.'" Laughlin to Newcomb [16, Sept. 26, 1885].

²⁷ A list of topics and dates of known meetings, is provided in the appendix. It was, however, the approach rather than the nature of the topic that determined the character of the Club's proceedings.

²⁸ Cf. A. T. Hadley [10, p. 70]. This passage from his presidential address to the A.E.A. in 1898, "The Relation Between Economics and Ethics," clearly exemplifies the differences between the older and the younger economists. Broadly speaking, Hadley preferred the wrong but consistent and explicit advice of the older group to the more cautious and vague approach of the younger generation. In place of "a presumptuous claim of knowledge," he

By contrast, the A.E.A. marked the emergence of a more mature, more complex, and more scholarly approach to economic thought. Although the Association's founders were bold and even defiant in their hostility to the ruling orthodoxy, they were flexible and open-minded in their positive views. They differed indeed among themselves on basic questions of method, theory, and policy; but they shared a common desire to encourage scholarly investigation and the exchange of information, and they soon moderated their initial aggressive tone. As the Association's membership expanded and it lost its reputation as an organ of a particular school or sect, its annual meetings provided an open forum in which any inclinations toward dogmatism were inhibited by the conventions of scientific procedure and the etiquette of formal debate. One wonders whether the same restraints existed in the meetings of the Political Economy Club.

At the silver jubilee meeting of the A.E.A. in 1909, Laughlin maintained that the Political Economy Club had failed to become the representative organ of American economics because it was "not comprehensive enough for a country with an area as wide and with economic interests as diversified as those of the United States."²⁰ Yet this is an unsatisfactory explanation, for the Club included in its membership representatives of all but the most radical economic opinions even *before* the A.E.A. came into existence, and it continued to be more comprehensive—at least in its nominal membership—until 1888. Nor is it true to say that the older body was more restricted in its sphere of operations, for both groups met in Eastern seaboard centers until 1893, when they both met in Chicago during the World's Fair.

The most important difference between the two organizations lay neither in the range of their membership nor in the location of their meetings but in their readiness to accept new members and new ideas. Whereas the Political Economy Club continued to be a closed private club, many of whose members regarded themselves as custodians of "sound" economic doctrine, the A.E.A. from its inception aimed to recruit as many fee-paying members as possible, whether scholarly or not, and was almost equally acquisitive in its attitude to intellectual innovations. At first, it is true, the Association's membership was small and many of its adherents were clergymen and reformers notable for their moral enthusiasm rather than for their scholarship. But before long its membership policy was vindicated; the initial distrust of the

asserted, the new political economy "substitutes either controversies or confessions of ignorance." For an excellent example of the merits and limitations of the older, more practical approach, see the admirable Ph.D. thesis by J. R. W. Leiby, published by Harvard in 1960 [14].

²⁰ See discussion following [6].

so-called "new" school of economics was gradually overcome, and the A.E.A. gained adherents from the ranks of the Political Economy Club as its more broad-minded members were reassured by their colleagues, such as Seligman, Mayo-Smith, and Walker, who already belonged to both societies.³⁰ By the end of the 1880's the A.E.A. was already beginning to assume the role of leadership among American economists which it has occupied ever since; and when the British Economic Association (later the Royal Economic Society) was founded in 1890, the English "learned" society model was consciously rejected in favour of the open plan of the A.E.A.³¹

Thus the future lay with the A.E.A.; and the Political Economy Club, like its English counterpart, preserved its original form and function. Until 1892, when Laughlin, the secretary, became head of the department of economics at Chicago, the Club continued to meet regularly—usually three times a year in April, June and December—at the house of one of its members in New York, New Haven, Boston or some intermediate or adjacent point. In April 1890 its meeting was held at Newcomb's house in Washington, and in April 1893 at the home of Stuart Wood in Philadelphia. With Laughlin's move to the Middle West, however, the established pattern was disrupted, and although Laughlin periodically extended invitations to some of his former colleagues in the East, a surviving membership list for the mid-1890's indicates that its support came entirely from Chicago and a few leading midwestern university centers.³² The Political Economy Club still included a sizable proportion of businessmen; and as late as 1899 even the A.E.A. was still making a strong appeal to the business community and serious consideration was given to a proposal to elect a man of affairs, C. S. Fairchild, who had been Secretary of the Treasury under Cleveland, as its president.³³ But the proposal was defeated, and the A.E.A. steadily became more national in its representation while

³⁰ One example of contact in the Club which benefited the A.E.A. is afforded by the following letter from Seligman to Ely dated Jan. 2, 1889: "I met Hadley at the Political Economy Club last Monday. When he heard that the 'confession of faith' had been dropped, he said he would join the Association gladly and that he proposed to take a warm interest in us and lend an active hand whenever possible. Put him down as a member" [20]. The "confession of faith" referred to is the Association's "Statement of Principles."

³¹ See Albert Shaw [17].

³² This undated list in Vol. III of the Scrap Books in the Ely Papers [8], includes the following university members: H. C. Adams and F. M. Taylor (Michigan); J. Cummings, H. R. Hatfield, J. L. Laughlin, T. B. Veblen (Chicago); R. T. Ely, B. H. Meyer, M. H. Robinson, W. A. Scott (Wisconsin); G. M. Fiske, D. Kinley (Illinois); W. W. Folwell, F. McVey (Minnesota); J. H. Gray (Northwestern). There were also nine members representing manufacturing, railroading, or banking.

³³ See, for example, W. Willcox to C. Hull, Dec. 12, 1899, and J. B. Clark to Hull, Dec. 15 and 23, 1899, A.E.A. papers [20]. The original suggestion came from F. W. Taussig of Harvard.

remaining academic in its outlook, and the Political Economy Club dwindled into insignificance.⁸⁴

APPENDIX

In a letter to Farnam dated Jan. 12, 1895 (Farnam papers) Laughlin remarked that there had been 26 meetings of the Club up to that time. He was then "getting the proceedings ready for the printer" (*ibid.*, Jan. 7, 1895); but if printed, no copy seems to have survived. The following is a list of meetings, topics and speakers mentioned in surviving correspondence.

Nov. 30, 1883	Inaugural meeting [at H. White's?], New York.
Jun. 11, 1884	No details.
Dec. 30, 1884	New York, "The effect of machinery upon the economic interests of the labouring classes."
Apr. 20 [?], 1885	No details.
Oct. 10, 1885	At Farnam's, New Haven.
Dec. 27, 1887	At C. F. Adams', Boston, "The Treasury Surplus."
Apr. 3, 1888	At Hewitt's, New York, "The New Tariff Bills."
Jun. 23, 1888	At Tuxedo Park, "The Repercussions of Taxes."
Dec. 29, 1888	At Walker's, Boston. [Hugh McCulloch on "Paper Money"?]
Apr. 23, 1889	"Trusts."
Jun. 10 [?], 1889	At Atkinson's, Brookline, Mass., "The Single Tax," introduced by White.
Dec. 28, 1889	New York, "The Silver Question in Great Britain and the U.S.A."
Apr. 13, 1890	At Newcomb's, Washington.
Dec. 26, 1890	No details.
Mar. 31, 1891	No details.
Dec. 10, 1892	No details.
Apr. 8, 1893	At Stuart Wood's, Philadelphia, "Has the gold standard of value appreciated any since the demonetization of silver?" introduced by Newcomb.
Sept. 16, 1893	At Laughlin's, Chicago.
Dec. 31, 1895	May 1902, and May 1903, All in Chicago.

REFERENCES

1. H. C. ADAMS, *Papers*, Ann Arbor, Michigan.
2. EDWARD ATKINSON, *Papers*, Massachusetts Historical Society, Boston, Mass.
3. ALFRED BORNEMANN, *J. Laurence Laughlin: Chapters in the Career of an Economist*. Washington 1940.
4. A. W. COATS, "The First Two Decades of the American Economic Association," *Am. Econ. Rev.*, Sept. 1960, 50, 555-74.

⁸⁴ I have been unable to trace the exact date of the Club's demise. The last recorded meeting I have discovered is May 1903. The Western Economic Society, founded in 1911, performed similar functions in the Chicago area until the 1920's. (For this information I am indebted to Harold G. Moulton, who was its executive secretary until 1922.)

5. J. DORFMAN, *The Economic Mind in American Civilization*, Vol. III. New York 1949.
6. R. T. ELY, "The American Economic Association 1885-1909," Publications of the American Economic Association, Third Ser., *Papers*, Apr. 1910, 11, 47-93.
7. —, *Ground Under Our Feet*. New York 1938.
8. —, *Papers*, Wisconsin State Historical Society, Madison, Wis.
9. H. W. FARNAM, *Papers*, Yale University Library, New Haven, Conn.
10. A. T. HADLEY, *The Education of the American Citizen*. New York 1901.
11. H. HIGGS, *Bibliography of Economics 1751-75*. Cambridge, Eng., 1935.
12. E. J. JAMES, "Newcomb's Political Economy," *Science*, Nov. 27, 1885, 6, 470-71. Letters to editor, reply by S. Newcomb, and by F. Franklin, *ibid.*, 495-6; letter to editor, rejoinder, by E. J. James, *ibid.*, Dec. 11, 1885, 517-18.
13. F. B. JOYNER, *David Ames Wells, Champion of Free Trade*. Cedar Rapids 1939.
14. J. R. W. LEIBY, *Statistics and the Labor Problem: A Biography of Carroll D. Wright*. Cambridge, Mass. 1960.
15. ALLAN NEVINS, *Grover Cleveland, A Study in Courage*. New York 1938.
16. SIMON NEWCOMB, *Papers*, Nov. 11, 1883. Library of Congress, Washington, D.C.
17. ALBERT SHAW, "Report of the Organization of the British Economic Association," Publications of the A.E.A., first ser., Jan. and Mar. 1891, 6, 163-74.
18. D. A. WELLS, *A Primer of Tariff Reform*. New York 1884.
19. H. F. WILLIAMSON, *Edward Atkinson, the Biography of an American Liberal 1827-1905*. Boston 1934.
20. AMERICAN ECONOMIC ASSOCIATION, *Papers*, Secretary's Office, Northwestern University.
21. *Appletons' Cyclopaedia of American Biography*, Vol. 3 and 4. New York 1888.
22. *Political Economy Club, Founded in London, 1821*. London 1921.

COMMUNICATIONS

The Golden Rule of Accumulation: A Fable for Growthmen

Once upon a time the Kingdom of Solovia was gripped by a great debate. "This is a growing economy but it can grow faster," many argued. "Sustainable growth is best," came the reply, "and that can come only from natural forces."

A few called the debate growthmanship. But most thought it would be healthy if it led to a better understanding of Solovian growth. So the King appointed a task force to learn the facts of Solovian economic life.

The committee reported that the labor force and population in Solovia grew exponentially at the rate γ . The number of working Solovians, N_t , at time t was therefore given by

$$(1) \quad N_t = N_0 e^{\gamma t}, \quad \gamma > 0.$$

The report expressed confidence that Solovia's supply of natural resources would remain adequate. It portrayed a competitive economy making full and efficient use of its only scarce factors, labor and capital, in the production of a single, all-satisfying commodity. Returns to scale were observed to be constant, and capital and labor were found to be so substitutable that fears of technological unemployment were dismissed.

The committee described the steady progress in Solovia's ways of production. It estimated that the efficiency of Solovian capital was increasing at the rate λ and that Solovian labor was improving at the rate μ . A continuation of these rates of technical advance was anticipated. Therefore production, P_t , at time t , was the following function of available capital, K_t , and the current labor force:

$$(2) \quad P_t = F(e^{\lambda t} K_t, e^{\mu t} N_t), \quad \lambda \geq 0, \mu \geq 0.$$

The report acknowledged further investigation of the production function might prove to be desirable.

Then the task force approached the growth issue. It doubted that technological advance could be accelerated and it took no positive stand on population increase. If γ , λ and μ were fixed parameters, then hope had to rest entirely on investment. While maintenance of the existing ratio of capital to labor would permit output per worker and per head to grow by virtue of technical progress, the report voiced the hope that higher incomes and perhaps a greater growth rate would be sought through a continuous increase in capital per worker, or what the task force called capital-deepening. It concluded by declaring the proper pace of capital-deepening to be a momentous question for Solovian political economy.

The King commended the task force for its informative and stimulating report. He invited all his subjects to join in search of an optimal investment policy. Solovian theorists considered dozens of fiscal devices for their effi-

ciency, equity and effectiveness. Mathematicians, leading the quest for a growth strategy, grappled with extremals, functionals and Hamiltonians. Yet nothing practicable emerged.

Then a policy-maker was heard to say, "Forget grand optimality. Solovians are a simple people. We need a simple policy. Let us require that the fraction of output accumulated be fixed for all time, that is:

$$(3) \quad \frac{dK_t}{dt} = sP_t, \text{ for all } t, 0 \leq s \leq 1.$$

If we make investment a constant proportion of output, our search for the idea investment policy reduces to finding the best value of s , the fixed investment ratio."

"It's fair," Solovians all said. The King agreed. So he established a prize for the discovery of the optimum investment ratio. The prize was to be a year abroad to learn how advanced countries had solved the growth problem.

Soon a brilliant peasant, Oiko Nomos, claimed the prize. Solovians laid down their tools, picked up pencils and pads, and converged on their capital to hear the proposed solution.

Oiko spoke. "I begin with a definition. By a *golden age* I shall mean a dynamic equilibrium in which output and capital grow exponentially at the same rate so that the capital-output ratio is stationary over time. This is precisely the pattern of growth which might emerge asymptotically from the regime contemplated for Solovia where population growth and technical progress are expected to be exponential and the investment ratio is to be fixed for all time.

"Now I am obliged to make some assumptions which I hope later researches into the exact shape of our production function will support:

"First, I assume that Solovia is capable of golden-age growth. This simply means that, corresponding to every investment ratio Solovia might adopt, there exists at least one capital-output ratio which, if established, will be exactly maintained by the dynamic equilibrium which follows from equations (1)-(3).

"Second, I assume that Solovia's golden-age growth rate is independent of its investment ratio. We may call this growth rate, g , the *natural* rate of growth, in that it depends not upon our investment decisions but only upon γ, λ, μ and possibly certain parameters affecting the shape of the production function. The existence of a natural growth rate implies capital and labor are substitutable in such a way that the capital-output ratio can adjust to any value of s so as to equate the rate of capital growth,

$$\frac{sP_t}{K_t}, \text{ to the natural rate of output growth, } g.$$

"We can express the output of an economy in a golden age and having a natural growth rate by the equation:

$$(4) \quad P_t = P_0 e^{gt}, \quad g > 0$$

where P_0 depends upon conditions at time zero.

"We come now to a crucial notion. Consider an economy which lacks a defi-

nite beginning and which has always enjoyed golden-age growth at the natural rate. It has traveled unswervingly up a single exponential path, a path stretching back indefinitely into the past. Along this path the output rate at any specified time (though not the rate of growth) depends, in general, upon the value of the equilibrium capital-output ratio. But this ratio depends upon the investment ratio that has reigned over the golden age; we noted earlier that under conditions of natural growth the capital-output ratio is simply:

$$(5) \quad \frac{K_t}{P_t} = \frac{s}{g}.$$

Therefore, the golden-age output rate at any time—the height of the growth path—is generally a function of the prevailing value of s . We can express this fact by replacing P_0 in (4) by the function $f(s)$. Thus:

$$(6) \quad P_t = f(s)e^{gt}.$$

"It has been observed that a large value of s corresponds to a small ratio of output to capital. Provided that the elasticity of output with respect to capital is uniformly smaller than one, a seeming condition for stability, the smaller the ratio of output to capital, the larger must be the absolute magnitudes of both output and capital. Hence $f'(s) > 0$.

"I shall call a golden age which lacks a definite beginning a *boundless golden age*. Such an age may be endless although that is not essential for the definition; but it must be endless looking backward.

"And now, if these concepts are clear and my assumptions granted, I wish to introduce the following lemma."

"A lemma, a lemma," the crowd shouted. It was plain that the Solovians were excited by the prospect.

Oiko resumed. "The lemma: *Each generation in a boundless golden age of natural growth will prefer the same investment ratio, which is to say the same natural growth path.*

"In deciding which growth path is best from its standpoint, a generation will look only at the amount of consumption which each path offers it. Given the constancy of s , every golden-age path is associated with a consumption path on which consumption grows exponentially at the same rate as output. Under conditions of natural growth, consumption along all these paths grows at the identical rate, g , so that these time paths of consumption cannot cross. Therefore, with resources limited, there must exist some uniformly highest, feasible consumption path. This dominant consumption path offers more consumption at every point in its history than any other natural-growth consumption path. All generations in such a history will naturally prefer this path, whence its corresponding investment ratio, to any lower consumption path. A rigorous demonstration is straightforward.

"Take the consumption rate of the 'generation' in a boundless and natural golden age at time t . By (3) and (6), this is:

$$(7) \quad C_t = (1-s)f(s)e^{gt}.$$

To find the value of s which maximizes C_t , we take the derivative with respect to s and equate it to zero. This yields:

$$(8) \quad -f(s)e^{st} + (1-s)f'(s)e^{st} = 0.$$

"It is apparent that upon dividing (8) by e^{st} all terms involving t vanish. The solution of equation (8) is therefore independent of the 'generation' whose consumption we choose to maximize. The s which is optimal for one generation in a natural boundless golden age is optimal for all. This proves the lemma."

Cries of "What a lemma!" resounded in the capital and Oiko was heartened by the reception. Anticipation ran high when he moved to speak again.

"And now I wish to announce a new and fundamental theorem. Theorem: *Along the optimal golden-age path, under conditions of natural growth, the rate of investment is equal to the competitive rate of profits.*

"Choosing the best value of s is simple enough in principle. A high value of s will be associated with a high golden-age output path. But too high a value of s will leave too little output available for consumption. Characterizing the exact optimum is a matter of calculus.

"Rewriting (8) in the form:

$$(8') \quad \frac{s}{1-s} = \frac{f'(s)s}{f(s)}$$

we find that the optimal ratio of investment to consumption equals what we may call the elasticity of golden-age output at time zero with respect to the investment ratio. Looking at (6), it is obvious that, for every investment ratio, this elasticity must be the same at all points (dates) along the associated golden-age path. If this were not so, the golden-age growth rate would depend upon the investment ratio, contrary to our assumption of natural growth.

"The remaining task is to express this elasticity in explicit terms of the production function, and thus in terms of relative factor shares.¹ Now the production function indicates that $f(s) = F(K_0, N_0)$. Next we use the golden-

age capital-output relation in (5) to write K_0 in the form $\frac{sP_0}{g}$. Upon making

this substitution in the production function (2) we obtain an equation in golden-age output at time zero as function of itself, the investment ratio and the labor force:

$$(9) \quad f(s) = F\left(\frac{sf(s)}{g}, N_0\right).$$

"Total differentiation of (9) with respect to s yields an equation in terms of $F_K(K_0, N_0)$, the marginal productivity of capital at time zero:

$$(10) \quad f'(s) = F_K \frac{f(s)}{g} + F_K \frac{s}{g} f'(s).$$

¹ Oiko was seen at this point to wave gratefully to Richard Nelson for help with this proof.

Upon rearranging terms and using the capital-output relation (5) we find that

$$(11) \quad \frac{f'(s)s}{f(s)} = \frac{a}{1-a}, \text{ where } a = \frac{F_K(K_0, N_0)K_0}{P_0}.$$

"Looking at (8') and (11) we see easily that

$$(12) \quad s = a$$

In competitive Solovia the variable a measures capital's relative share in total output at time zero. Now we have observed that the elasticity of golden-age output with respect to the investment ratio is everywhere equal on any particular golden-age path; it follows by (11) that a , the profit-income ratio, must also be constant along any particular golden-age path. Therefore, by (12), on the optimum natural growth path the investment ratio and the profit ratio are constant and equal. This proves the theorem.

"We may call relation (12) the *golden rule of accumulation*, and with good reason. In a golden age governed by the golden rule, each generation invests on behalf of future generations that share of income which, subject to (3), it would have had past generations invest on behalf of it. We have shown that, among golden-age paths of natural growth, that golden age is best which practices the golden rule."

The Solovians were deeply impressed by Oiko and his theorems. But they were a practical people and soon full of queries. How, Oiko, does your theorem apply to Solovia? What must we do if we are not already on the golden-age, golden-rule path? Should we abide by the golden rule even when out of golden-rule equilibrium?

"Perhaps," Oiko replied. "We might attempt to approach the golden-rule path asymptotically. However I urge that we, in our lifetime, take whatever steps are required to place Solovia securely on the golden-rule path. Associated with that path is a unique capital-output ratio. If our present capital-output ratio is smaller, then our consumption must be slowed until our ratio is no longer deficient. If our present ratio exceeds the golden-rule ratio, then we must consume faster until our capital-output ratio is no longer excessive."

"Once our capital-output ratio has attained its golden-rule value, we must make a solemn compact henceforth to invest by the golden rule. If the investment ratio remains ever equal to the profit ratio, no generation in all the future of Solovia will ever wish we had chosen a different, successfully enforced investment ratio. The foundations are thus laid for a quasi-optimal social investment policy."

The crowd dispersed, happy for their Kingdom's future. But there were skeptics who reminded the King of Oiko's assumptions. They questioned Solovia's immunity from technological unemployment. They wondered whether their production function admitted of a natural growth rate. So the King named a team of econometricians to investigate the shape of the Solovian production function.

The King's econometricians were eventually satisfied that production in Solovia took place according to the Cobb-Douglas function:

$$(2') \quad P_t = A(e^{\lambda t} K_t)^{\alpha} (e^{\mu t} N_t)^{1-\alpha} \quad 0 < \alpha < 1$$

where α , a fixed parameter, was the elasticity of output with respect to the capital stock. They preferred to write it in the form:

$$(2'') \quad P_t = A e^{\rho t} K_t^\alpha N_t^{1-\alpha}, \quad \text{where} \quad \rho = \alpha\lambda + (1-\alpha)\mu.$$

Solovians knew then they could have any capital-output ratio they desired, with full employment. The existence of a full-employment, golden-age equilibrium for every investment ratio was assured. Differentiating logarithmically, they quickly calculated from (1) and (2'') that in a golden age, capital

and output would grow exponentially at the rate $\frac{\rho + (1-\alpha)\gamma}{1-\alpha}$, independently

of the investment ratio. Thus did Solovia discover her natural rate of growth. What a triumph for Oiko. His assumptions were completely vindicated.

Joyously, the Solovians hurried to compute the golden-rule path. It did not take them long to realize that α was capital's share. On the golden-rule path, s would equal α . Next, using (5), they divided α by their natural growth rate to obtain the capital-output ratio on the golden-rule path. To their great relief, the resulting ratio exceeded their actual capital-output ratio by only a small factor. No wonder for they had invested most of their profits and consumed most of their wages anyway.

With Oiko's inspiring words still ringing in their ears, the Solovian people pressed the King for a program to attain the golden-rule path. So the King proclaimed golden-rule growth a national purpose and instituted special levies. Once the golden-rule path was reached, investment was continuously equated to profits and Solovians enjoyed, subject to (3), maximum social welfare ever after.

EDMUND PHELPS*

REFERENCES

1. JOAN ROBINSON, *The Accumulation of Capital*. London 1956.
2. R. M. SOLOW, "A Contribution to the Theory of Economic Growth," *Quart. Jour. Econ.*, Feb. 1956, 70, 65-94.
3. T. W. SWAN, "Economic Growth and Capital Accumulation," *Econ. Record*, Nov. 1956, 32, 334-61.

* The author is assistant professor of economics at Yale University.

The Bethlehem-Youngstown Case and the Market-Share Criterion

One of the most important unsolved problems in antitrust policy concerns the precise significance of the market share of the defendant in determining whether or not certain violations have occurred. Under Section 2 of the Sherman Act [1], it is apparently no longer true (if it ever was) that one-firm production of some (unspecified) large percentage of any more or less homogeneous product is usually sufficient to prove violation and justify dissolution.

But beyond this, the content of the law remains uncertain. The leading recent decision [10] leaves unsettled two key points of interpretation: (1) the definition of "market control" or "monopoly power" as a necessary element in violation; (2) the need for some additional factor—such as exclusionary practices—to complete the crime of monopolizing.¹

At least until the new Section of the Clayton Act [2]² is interpreted by the Supreme Court, the role of the market-share concept in merger regulation must be similarly uncertain. However, the administration of the new Section [7, p. 519] and in particular the interpretation accepted by the District Court in what seems to be the major relevant case [9] tend to support the belief that this role will be of great practical significance in the treatment of "horizontal" mergers. It may well be that in this area the law will prohibit those mergers, and only those mergers, which would combine suppliers of "large" percentages of the output of some "product," or would increase the share of the "product" accounted for by a firm with an already "large" existing share. The aspects of the Bethlehem-Youngstown decision which appear to support such a prediction are, first, the amount of attention devoted to the definition of markets and to the calculation of the shares in these markets accounted for by the participants in the proposed merger, both individually and in combination; and, second, the treatment of the degree of concentration in the industry as a factor relevant to legality.

Let it be said at once that the same practical outcome—that is, the decision to enjoin the merger—could very likely have been wholly justified without any reference to shares or concentration, and this indeed without adducing any evidence not cited by Judge Weinfeld. It is what appears to be the main line of argument, rather than the resulting action, which can be criticized on economic grounds. This main line of argument is discussed in the first section of the present study. The second section outlines certain objections to the policy implied by this argument. Finally, an alternative approach to the problem of merger control is suggested.

¹ In this proceeding, the majority held that the duPont company did have "monopoly power" over the cellophane market, but held this fact to be irrelevant on the ground that the market which should be considered relevant is not the cellophane market but that for "flexible packaging material." In general, the relevant market should, the court held, include "commodities reasonably interchangeable by consumers for the same purposes." As to the need for some other element in addition to monopoly power, the Cellophane decision does not expressly reject the court's "conclusion in prior cases that when an alleged monopolist has power over price and competition, an intention to monopolize in a proper case may be assumed"; but it is also pointed out that at least one of the framers of the Sherman Act certainly intended that "something like" exclusionary practices must be employed by an alleged monopolist before he could be convicted under Section 2. Since the Cellophane decision hinges on a finding that no monopoly power existed, the question of completion of the crime is not directly at issue.

² In 1950, Section 7 of the original 1914 Act was strengthened by an amendment making it applicable to acquisitions of assets as well as of securities; eliminating the provision which limited the "substantial lessening of competition" relevant under the Act to that "between the acquiring and the acquired corporation"; and substituting the phrase "in any line of commerce in any section of the country" for the older "in any community" as a description of the sector of commerce within which illegal restraint might occur.

I. *The Court's Argument*

There is no doubt that Judge Weinfeld considered the definition of the affected markets to be one of the two most important questions to be considered in applying Section 7. In denying a motion for summary judgment, he declared [8, p. 879]:

In broad outline, the essential ultimate issues which the Court is called upon to determine and as to which the Government has the burden of proof in order to sustain its charge that the proposed merger comes within the prohibition of Section 7 are: the line or lines of commerce and the section or sections of the country in which the effects of the merger may be felt, or as phrased by the Supreme Court, the relevant market—"the area of effective competition" [11, p. 593]—and whether the merger may substantially lessen competition or tend to create a monopoly.

The main decision itself is to a large extent devoted to the selection of "lines of commerce" and "sections of the country" with reference to which the prospective impact of the proposed merger is to be measured.

Perhaps the most interesting aspect of this part of the decision is its attempt to distinguish between the market definition relevant under Section 2 of the Sherman Act and that appropriate under Section 7 of the Clayton Act—a distinction which would, in brief, make "reasonable interchangeability" the proper classificatory guide in the former context as against "peculiar characteristics and uses" in the latter. The significance of both definitions lies, of course, in their use to delimit the nature and quantity of outputs to be included in the global total—"the area of effective competition"—with which the defendants' outputs are to be compared. Needless to say, the definitional distinction made in *Bethlehem-Youngstown* does not indicate the real or purported discovery of some new economic principle which would take the place of substitutability in indicating competitiveness among the products of different firms. The distinction serves rather to epitomize the doctrine that a (somehow) different view of market definition is appropriate under Section 7 than under Section 2 of the Sherman Act, and in particular that the *Cellophane* case is not a proper precedent in cases involving the former Section. On this point, the decision reads [9, pp. 593-94, note]:

... the basic issue in the *Cellophane* case was that of monopoly power and the Supreme Court expressly limited the market definition there to the monopolization clause of §2 of the Sherman Act. There is a basic distinction between §2 of the Sherman Act and §7 of the Clayton Act. Further, monopoly power was defined by the Supreme Court in the *Cellophane* case as "the power to control prices or exclude competition." Obviously, when the question is power over price, substitute products may be relevant because they can limit that power. The issue under §7 ... is not whether a merger may result in a company having power over price or the power to exclude competition ... [it] is whether there is a reasonable probability of a substantial lessening of competition. There can be a substantial lessening of competition with respect to a product whether or not there are reasonably interchangeable substitutes. The merger of two producers of a product may substantially lessen competition

or tend to create a monopoly in the market for that product even though it does not substantially lessen competition or tend to create a monopoly in the broader market embracing all the products which are reasonably interchangeable with that product. . . . This does not, however, mean that interchangeability can be ignored—a high degree of interchangeability may under certain circumstances make it more or less the same product. [Citations omitted.]

A simpler and, in the long run, probably more expedient way around the Cellophane doctrine would appear to have been available: that is, to accept the general relevance of imperfect substitutes in assessing the competitive position of a given firm (as is done by indirection in the last sentence of the passage quoted); but to require a smaller percentage share for a violation of Section 7 of the Clayton Act than would be necessary under the antimonopolization law. For the argument used here tends to undermine the entire orthodox rationale for the consideration of market shares in merger cases: If "the power to control prices or exclude competition" is not at issue under Section 7, then why invoke the elaborate apparatus of market definition and percentage share computation which is alleged to be specifically designed to measure "market control" or "monopoly power"—i.e., the power to control prices or exclude competition? Why not, for example, simply demonstrate that the two steel companies were satisfactory alternative sources of supply of the same or substitute products to some of the same buyers, and that the purchases of these buyers were "substantial" in terms of money value? Let me hasten to say that I do not believe that the orthodox case is valid under either Section: I merely mean to suggest that the attempted distinction does not seem entirely consistent with the rest of the Bethlehem-Youngstown decision.

At any rate, it does not appear that this decision has furnished an acceptable rule for market definition in merger cases which is any more satisfactory in practice—that is, any more objectively determinate—than that which would be appropriate under Section 2 of the Sherman Act. The suggestion that competition among imperfect substitutes can always be ignored under Section 7 must, of course, be rejected. A merger involving two producers of imperfect substitutes obviously could have as much anticompetitive impact, in depriving buyers of alternative independent sources of effective substitutes, as a merger between producers of perfect substitutes. And if it is admitted that the imperfect competition between the participants must be considered in determining their premerger competitive relations, then it must also be admitted that imperfect competition between the participants, on the one hand, and the firms remaining outside, on the other, must be considered in assessing the expected competitive status of the proposed combination.

An "asymmetrical" market definition—one which would use one criterion for interparticipant competition and another for competition between the participants and outsiders—cannot be defended in any way that I can see. In some circumstances, admitting the relevance of nonhomogeneous competition will tend to weaken the case against a proposed merger by enlarging the admitted area of competition remaining after the merger, without any commensurate increase in the estimated amount of interparticipant competition

(which the merger would quash). In other circumstances, the effect may be reversed. The choice of market definition, like the choice of a maximum legal percentage for market share, remains subject to the same basic uncertainty here as under the Sherman Act.

The purpose of the "line-of-product" discussion in the Bethlehem-Youngstown decision was to define statistical categories of output in order that the sales of each output by the participant firms might be compared, in a given area, with the corresponding total sales figure for all producers. Since it was quite properly concluded that the steel companies compete for business throughout the United States, subareas were selected simply by choosing sections accounting for a large proportion of total sales, and of the sales of each defendant. The "appropriate relevant markets" finally arrived at are as follows [9, p. 603]:

- (1) the iron and steel industry,
- (2) hot rolled sheets,
- (3) cold rolled sheets, and
- (4) hot rolled bars, in
 - (a) the United States as a whole,
 - (b) the northeast quadrant of the United States,
 - (c) Michigan, Ohio, Pennsylvania, and New York,
 - (d) Michigan and Ohio,
 - (e) Michigan, and
 - (f) Ohio
- (5) buttweld pipe,
- (6) electricweld pipe,
- (7) seamless pipe,
- (8) oil field equipment,
- (9) oil field equipment and supplies,
- (10) tin plate, and
- (11) track spikes, in
 - (a) the United States as a whole.

The list does not purport to exhaust the areas of competition among the participant firms.

At the beginning of the present study, it was suggested that the Bethlehem-Youngstown case tends to support an interpretation of the law which could prohibit only those mergers which combine suppliers of "large" percentages of the output of some "product" or increase the share of a firm with an already "large" existing share. On the other hand, it must be admitted that the percentages at issue in this case, while certainly large as compared with the negligible share attributable to the member of a pure-competition industry, are small compared to the shares considered significant in Sherman Act cases, as may be seen in the accompanying tables (Tables 1 and 2). This relative smallness becomes more impressive when it is noted that the proposed merger was found to be (prospectively) in violation of the statute in *each* of the markets considered. The essential point is, however, that some minimum share may well be crucial in the law's application; furthermore, what may be large enough for one judge may be much too small for another.

TABLE 1—PERCENTAGE OWNERSHIP OF INDUSTRY CAPACITY TO PRODUCE FOR THE TWELVE LARGEST STEEL PRODUCERS (1957)

Company	Per Cent of Industry Capacity (Ingots)
U. S. Steel Corporation	29.7
Bethlehem Steel Company	15.4
Republic Steel Corporation	8.3
Jones and Laughlin Steel Corporation	4.9
Youngstown Sheet and Tube Company	4.7
National Steel Corporation	4.6
Armco Steel Corporation	4.5
Inland Steel Corporation	4.1
Colorado Fuel and Iron Corporation	2.1
Wheeling Steel Corporation	1.6
Sharon Steel Corporation	1.4
Ford Motor Co.	1.4

Source: [9, p. 585].

Nowhere in the decision is it actually stated that elimination of an independent source of an appreciable supply of a given product is *insufficient* to make a merger illegal if the resulting market share is not large enough. More-

TABLE 2—PERCENTAGE OF INDUSTRY SHIPMENTS ACCOUNTED FOR BY BETHLEHEM AND YOUNGSTOWN, CALENDAR YEAR 1955 (EXCEPT AS NOTED)

	Bethlehem	Youngstown	Bethlehem- Youngstown
Hot Rolled Sheets	20.1	5.7	25.8
Cold Rolled Sheets	16.9	7.7	24.6
Hot Rolled Bars	16.9	4.4	21.3
Track Spikes	19.1	9.9	29.0
Tin Mill Products ^a	16.3	5.1	21.4
Buttweld Pipe	11.1	13.6	24.7
Seamless Pipe	4.1	8.0	12.1
Electricweld Pipe ^b	1.3	6.9	8.2

^a Principally tin plate.

^b 1957 figures. Bethlehem has been producing electricweld pipe in commercial quantities only since May 1957.

Source: [9, p. 606].

Note: On page 614 of the decision, it is noted that "Bethlehem's supply stores accounted for 5.7% and Youngstown's for 6.7% of total industry sales" of oil field equipment and supplies in 1956.

over, it is expressly found, and therefore presumably considered relevant, that an amount of direct competition both absolutely and relatively substantial would be eliminated by the merger of the two steel companies.³ However,

³ "About 75 per cent of the combined capacity of Bethlehem and Youngstown for the production of finished steel products is represented by products which both companies produce and sell in common. In 1955 the combined sales of Bethlehem and Youngstown of these common products amounted to approximately \$1.5 billion" [9, p. 586].

Judge Weinfeld's general statement of the meaning of the statute leaves this question in doubt;⁴ and, as has been noted, the extended consideration of market shares and the emphasis on the concentration ratio tend to support the view suggested here. If it had been desired merely to show competitiveness between the two participants, this could have been accomplished without any excursion into the theory and practice of market definition. It would have been necessary only to show that some nonnegligible amount of dollar sales by each company was accounted for by orders for which the other company was a significant competitor: that is, for which the buyers would have substituted the other company's product, had it been offered at the lowest cost-covering price, if the actual seller had withdrawn his supplies. (This suggested definition of "significant competitiveness" will be further discussed in Part III, below.)

Since it would not be necessary in this connection to calculate the degree of monopoly power resulting from the merger, or to predict the extent to which buyers are probably going to be worse or better off, there would be no need to define the relevant market, or to attempt to measure the effectiveness of competition either before or after the combination. Similarly, differences of opinion regarding the precise boundaries of competitive areas would not present crucial difficulties. It would be sufficient to show that there is some area of significant competition (as defined above) which would be eliminated by the proposed merger.

Apart from the significance attributed to the market shares accounted for by the participants themselves, and hence to the proposed merged firm, the decision apparently ascribes an independent importance to concentration of ownership in the steel industry as a whole: that is, to the fact that the concentrating effect of the merger would be added to an already high degree of over-all concentration. The following quotation illustrates this point [9, pp. 604-5]:⁵

A major purpose of Section 7 is to ward off the anticompetitive effects of increases "in the level of economic concentration resulting from corporate mergers and acquisitions" [12, p. 3]. . . . If Bethlehem were to acquire Youngstown the Big Two would have 50 per cent [of the national

⁴ "There may be a substantial lessening of competition or tendency to monopoly when a merger substantially increases concentration, eliminates a substantial factor in competition, eliminates a substantial source of supply, or results in the establishment of relationships between buyers and sellers which deprive their rivals of a fair opportunity to compete" [9, p. 603].

⁵ The following statement should also be considered in this connection [9, p. 583]: "A fair reading of both the Senate and House Committee Reports [regarding the 1950 amendment of Section 7] leaves no doubt as to its major objectives: As stated in those Reports they were, in some instances *in haec verba*, (1) to limit future increases in the level of economic concentration resulting from corporate mergers and acquisitions; (2) to meet the threat posed by the merger movement to small business fields and thereby aid in preserving small business as an important competitive factor in the American economy; (3) to cope with monopolistic tendencies in their incipency and before they attain Sherman Act proportions; and (4) to avoid a Sherman Act test in deciding the effects of a merger." An intent to deter concentration does not, of course, justify *limiting* antimerger action to those cases where significant concentration exists or threatens to occur.

steel market]. . . . In sum, the merger of Bethlehem and Youngstown would bring together the second and sixth largest integrated steel companies with 23,000,000 and 6,500,000 tons of ingot capacity, respectively, giving Bethlehem almost 21 per cent of industry capacity. This would add substantially to concentration in an already highly concentrated industry and reduce unduly the already limited number of steel companies. The merger would increase concentration in the hands of the Big Four and the next three companies after U.S. Steel by 4.6 percentage points, which would be the greatest increase in concentration in the iron and steel industry [roughly, in any decade] from 1901 to 1958 . . . with the exception of the decade 1920 to 1930 when Bethlehem and other large companies were engaged in a series of important mergers and acquisitions.

Only if at least one of the participants is relatively large can an over-all industrial concentration ratio be significantly affected by a merger. It is for this reason that the emphasis on the over-all ratio tends to reinforce the probable legal importance of the market shares of the participants.

Some aspects of the treatment of concentration in the Bethlehem-Youngstown decision may be thought of as differentiating this case from the general run of mergers, and as limiting the applicability of its doctrine to firms which are absolutely large [9, p. 586], show a past history of growth through merger [9, pp. 586-87], and are in industries where entry is extraordinarily difficult [9, pp. 606] or which are already characterized by a high degree of concentration. (On the other hand, the presence of "vertical" anticompetitive aspects [9, pp. 611-15] does not serve to differentiate this case, since prospective violation was found in several markets unaffected by these aspects.) However, it is hardly to be expected that Section 7 is henceforth to be enforced only with respect to giants in concentrated industries, or that an entirely different set of principles will be used with respect to nongiants. A somewhat less drastic differentiation appears more likely. For example, a larger share of the market, on the part of one or both participants, may well turn out to be legal in industries of smaller size, more favorable entry characteristics and less concentration, and with respect to applicants with little or no past history of growth through merger. Such a development as this would still leave the concept of market share in a key position in the application of Section 7.

II. Objections to the Court's Argument

There are three main objections to injecting the question of market share into the regulation of mergers. The first is that the definition of the relevant market and the determination of a proper limit for the share of any one firm are essentially wide-open questions, not subject to judicial determination in any one case and not subject to discovery by examination of similar past instances and averaging the results. The second is that the injection of this concept may very well unduly limit the application of the statute so that economically undesirable mergers may be permitted to escape its prohibition; moreover, it is also possible that certain economically desirable mergers may be prevented. The third is that these fundamental faults do not appear to be balanced by any compensating advantage. Certainly at least some of the

advantages claimed for the suggested doctrine turn out upon examination to be nonexistent. These three objections will be discussed in turn.

As has been pointed out above, the question of market definition and determination of a proper limit for the share to be accounted for by any one firm is no less difficult here than under the Sherman Act. Moreover, the use of market share as a policy guide appears to have no real economic justification under either statute. In connection with monopolizing or merger, such a justification can hardly be found in any analogy with the virtually negligible share of industrial supply attributable to the pure competitor. Nor does it appear that a justification can be found in terms of the theory of "workable competition." As I have written [6, pp. 298-99] in connection with Section 2 of the Sherman Act, this theory:

as applied to the antitrust problem issues in little more than a generalized prescription that any group of goods that "we think of as the 'same' product" should be sold by more than one firm (or "a considerable number of firms") none of which accounts for a "large" percentage of sales. In this form, the doctrine is too vague and too unreliable to be of use as a policy guide: too vague, because of the indistinct boundaries of the "product" concept fixing the area to be considered as within the industry (i.e., belonging to the relevant market), because of the lack of any clue as to how many competitors within this boundary would be sufficient or as to what percentage of sales would be too large for any one firm, and because of the uncertain status (if any) given to the competition of substitutes outside the industry; too unreliable, because the mere counting of firms and figuring of percentages within any defined area of production is not an accurate measure of either the stimulus to the producer or protection to the consumer afforded by the presence and/or possibility of competition.

In view of the failure of these attempts to trace a dependable causal connection between market share and economic performance, with results suitable for use as a legislative or judicial guide, it is not surprising that more recent advocates of a policy of deconcentration have preferred to defend their proposals on essentially political grounds. Thus, Kaysen and Turner, in a work [4] which I have discussed in detail elsewhere [5], assert their belief that the adoption of improved economic performance as the primary goal of antitrust policy would "present definitional and administrative problems of such magnitude that consistent and sensible enforcement would be well-nigh impossible" [4, p. 49]. Their own program of deconcentration is justified as a means of eliminating "unreasonable market power"—an entity whose operational definition turns out to be rather complicated, but which appears to occur whenever a business management exercises some degree of continuing discretion with regard to price policy, and cannot prove that the ability to exercise this discretion arises from one or some of a short, enumerated list of causal factors [4, pp. 265-70]. The following passage sets forth their reasons for regarding the elimination of this "power" as a proper primary target for antitrust policy [4, pp. 48-49]:

Our positive reasons rest ultimately on a value judgment. The most im-

portant aspect of the competitive process is that it is self-controlling with regard to private economic power. For all the important qualifications and limitations of the doctrine of the invisible hand which modern economic analysis has produced, that doctrine remains the basic political justification for an enterprise economy in which major economic decisions are compelled and coordinated through the market. It is the fact that the competitive market *compels* the results of its processes which is the ultimate defense against the demand that economic decisions be made or supervised by politically responsible authorities. Without such market compulsion, that demand appears ultimately irresistible in a society committed to representative government.

It does not seem likely that this sort of demand will in fact be made; but be that as it may, the primary objective of the suggested policy is clearly to avoid certain alleged political dangers rather than to improve the functioning of markets in an economic sense.

The second argument against the percentage-share limitation is the practical consequence of the first: that is, that its economic influence may well be undesirable. A merger need not be relatively large-scale in order to be economically objectionable. The absorption of a small maverick by an average-sized competitor may easily have a more harmful effect than the marriage of two apathetic giants, in that in the former instance a promising source of new techniques of production or product variation, or of independent price experimentation, may be removed from the scene, whereas the latter might well leave everything essentially the same. Again, the disappearance of a firm is perhaps seldom just a matter of subtracting one from a list of sources of identical goods; there are in many cases certain needs, certain markets, which are less well served after any merger. There is, moreover, the ever-present possibility that the small firm might grow because of its superior merit. That this possibility cannot be predicted or assessed in advance does not make it any less real or important. Where a firm disappears as a result of losing business to its competitors, there is a presumption that these competitors' relative growth at the expense of the defunct firm is accompanied by some superiority in product or price; as will be pointed out below, there is no such presumption in connection with disappearance by merger.

In support of a policy of permitting all relatively small-scale mergers, certain arguments are frequently advanced which on examination do not appear valid. It is said that such a policy is necessary (1) to permit transactions that bring about cost savings and/or product improvements; (2) to provide that free market for the disposal of business assets which is necessary to promote maximum mobility of resources and justified investment of capital [7, p. 493]; and (3) to bring the treatment of mergers into line with the treatment of other restraints of trade which are subject to equally vague permissive limits.⁸ The first point is cogent only with respect to mergers not merely sufficient but actually *necessary* to bring about the improvements involved. Should these instances turn out to be frequent enough or important enough individually to

⁸ See, for example, the discussion of "exclusive dealing" in [3].

warrant a modification of antimerger policy for their accommodation, there seems to be no reason to suppose that an appropriate modification would take the form of a percentage-share limitation. A similar observation applies to the narrowing of the asset market by prohibiting firms from selling out to their competitors. Indeed, if the price offered by a competitor is markedly above that available from others, does not the excess probably represent the "protective" value to the competitor of removing independent competition, and permitting its payment therefore an undesirable method of promoting liquidity? If, on the other hand, the excess is due to considerations of superior efficiency, this case reduces to that identified by the first point, and could be dealt with (if necessary) by the same policy modification. As to the third point, suffice it to say that the value of these other percentage criteria is at least as doubtful as the value of those applied to mergers.

On the other hand, some relatively large-scale mergers may be economically desirable, in the sense that they are necessary to produce an otherwise unavailable economic benefit. To the extent that such transactions are prevented by a policy of merger control based on a percentage-share criterion, the results of such a policy are disadvantageous. It would seem, on the basis of present evidence, that this sort of effect would not often occur; however, its possibility certainly should not be ignored.

III. *Proposed Basis for Merger Regulation*

Although there seems to be no economic case for a policy of merger regulation aimed at limitation of the share of a given market accounted for by one firm, there is an alternative basis which appears to be more promising. This rationale is based on the general economic case against practices restricting the choices open to sellers or buyers: that is, against activities by which a seller (or buyer) makes it more difficult—or impossible—for buyers (or sellers) to obtain access to the products of (or to sell to) his independent competitors. In brief, acquisition of a competitor may, by depriving some set of buyers of a formerly available source of supply, enable the acquiring firm to charge a higher price and/or to make an alteration in product (broadly defined so as to include all the nonprice aspects of his sales) which would not otherwise have been profitable. *Unless the merger is necessary for the achievement of cost reductions or product improvement*, it can be shown that, if actual (unrestricted) expenditures and revenues are acceptable indicators of the costs and benefits of any resulting change in output, the increase in net profit accruing to the combined firm as a result of such a stratagem is almost certain to be less than the losses incurred by others; indeed, this is almost self-evident, since any such output change would *ex hypothesi* produce no net revenue gain in the absence of restriction. (Increased profits from higher prices on outputs which would have been sold anyway, however, represent merely transfers of income from buyer to seller, without any net benefit or loss.) The argument is essentially the same as the general case supporting free entry and free mobility of resources, and is open to the same objections; if the general case is accepted, so is the case for an antirestrictive merger policy.

There appears to be a considerably greater probability of net economic loss when a competitor is eliminated by merger than when he is displaced through loss of business to other firms. Product change and/or price reduction would almost certainly be necessary to attract customers away from an existing firm and thus to eliminate it by simple displacement. Except in instances of cut-throat tactics, which should be dealt with directly in law, simple growth through displacement of competitors does not imply net economic loss even though the choice of firms available to customers is thereby rendered less extensive. It is otherwise with mergers, which will be undertaken if the total prospective gains—possibly originating wholly or in large part from the protected status to be obtained thereby—appear sufficient to cover whatever incidental costs may arise, and if a suitable distribution of the proceeds can be agreed upon. This does not mean, of course, that no merger could result in economic gains sufficient to justify it regardless of an appreciable protective effect, but only that we cannot presume that any merger will have some desirable results, as we can in the case of simple expansion.

For reasons admirably set forth by Markham [7, pp. 493-95] it seems probable that few mergers can be shown to be indispensable to the production of cost savings or other economic benefits. Thus, to prohibit mergers between firms significantly competitive with one another might well be the best available course.

The chief conceptual problem connected with such a policy is the provision of a suitable definition of "significant competitiveness." It is necessary to draw a definite and defensible line between the competitiveness which will make a merger subject to legal control and the general competitiveness between each pair of firms in the economy; and the rough distinction between "potential" and "actual" competition is not sufficiently precise to serve this purpose. It has been suggested (in Section I) that the legal test of significant competitiveness among merger participants be satisfied by a showing that some nonnegligible amount of dollar revenues of one participant is accounted for by sales for which buyers would have substituted the other participant's product, had it been offered at the lowest cost-covering price, if the actual seller had withdrawn his supplies. In a sense, this test is an indicator of potential rather than actual competition. Not *actual* price relationships nor *immediate* product availability are referred to in assessing competitiveness, but rather the possibility of substitution of the products of firm A for those of firm B under the most favorable conditions for such substitution, given the actual costs and (with an exception to be noted below) the product-lines of firm A. But some such set of conditions must be chosen in any assessment of competitiveness.

Since only one firm can in fact supply each particular shipment actually bought, *any* criterion of competitiveness relates to potential rather than actual substitution; and potential substitution—or substitutability—has different meanings according to the conditions under which the opportunity for substitution is supposed to take place. If we attempt to assess competitiveness, or potential substitution, while allowing for all possible readjustments in the pro-

duction plan and cost levels of the competitors, we soon see that not only producers of similar products but also every entrepreneur, and indeed every potential entrepreneur, must be accounted a significant competitor. On the other hand, to regard firms as competitive only where they are so evenly matched that the buyer must flip a coin to choose between them is most certainly to underestimate the extent of effective competition—i.e., the area in which the existence of a particular competitive source exerts a limiting effect on the willingness of the supplier to raise prices or reduce quality.

What is needed here is an indicator of effective competition between the firms in question in so far as this competitiveness exceeds the "background level" of potential competition—the competition of entrepreneurs in general—which may be regarded as practically unaffected by the disappearance of any one firm. Thus, while a merger of two firms in dissimilar and noncompetitive industries would not be ordinarily regarded as having any significant anti-competitive impact, an indicator of effective competition *should* take into account potential product-lines which the firm in question is able to enter more quickly or more efficiently than the average potential new entrant into the field. Effects too small to justify the cost of policing and prosecution could presumably be eliminated from consideration by exempting transactions involving companies below a certain minimum size. (This discussion has referred only to the horizontal aspect of mergers; a vertical integration may have an entirely dissimilar anticompetitive effect.)

It should be remembered that any proposed expansion is not blocked by denial of permission to acquire a competitor, but simply confined to a channel where it cannot ordinarily take place unless accompanied by some desirable consequences. Moreover, it is often possible to achieve substantial cost savings by eliminating duplicate facilities and by limited cooperation short of merger. In these instances, proper policy would prevent merger but would not prevent these economies. Many of the advantages brought about by rail consolidation are examples of this sort of saving.

Alternatively, if future experience should suggest a need for selective permission of some mergers between competitors, a screening process could be set up, perhaps to be administered by the Federal Trade Commission, with the burden of proof on the applicant firms to show that their merger measures up to the rigorous test of indispensability. Permission for an anticompetitive merger might well be followed by special surveillance for a period of years with a view to determining whether or not price control should be instituted.

Finally, in spite of the above-mentioned presumption that the expansion of a firm which occurs through simple growth rather than combination, and without cutthroat tactics, is economically justified, there appear to be good grounds for some sort of limit on the size of the individual enterprise, a limit which may or may not require present embodiment in law. The psychological costs involved in such a limit may perhaps be minimized by avoiding its formulation in absolute terms; I do not mean to suggest that a satisfactory result cannot be achieved by a policy of gradual braking on expansion rather than building a blank wall. From the economic point of view, it is evidently

very desirable that what has been termed the background level of potential competition be kept high: that is, that each existing firm be always kept aware of the possibility of new competition originating outside the circle of his existing significant competitors, if any, ready to materialize in the event of unsatisfactory performance by the incumbent. A limitation on the size of individual enterprises would serve this end by helping to insure the maintenance of many independent sources of productive factors, including initiative and financing, in sufficient abundance to make their influence felt in every market.

From a broader point of view, such a limitation would help to insure the existence of "many" independent sources of employment and income in order to prevent, or to reduce to a minimum, coercion of the individual in matters rightfully reserved to his own judgment. I trust there is no need to labor this point in principle. What is desired is that each man threatened with dismissal or refused employment can in the majority of cases (preferably in all cases) find alternative employment. The important thing is not, of course, merely the *number* of available alternative employers, but also their collective capacity for hiring. (That is, if 99 per cent of the total jobs in the country were controlled by one employer, it would be of little importance that the remaining 1 per cent were controlled by a thousand employers. The probability that a man dismissed by the giant could find a job with another employer would still be small, since the total number of "independent" jobs would be relatively small.) Therefore, what would be called for would be a limit—formally elastic or otherwise—on the percentage of the jobs within the political unit (i.e., unit of free migration) which is controlled by any single employer or other entity—e.g., a single trade union.

LUCILE SHEPPARD KEYES*

*The author is an economist specializing in problems of economic regulation. Her residence is in Washington, D.C.

REFERENCES

1. 15 U.S.C.A. §§1-7.
2. 15 U.S.C.A. §18.
3. ATTORNEY-GENERAL'S NATIONAL COMMITTEE TO STUDY THE ANTITRUST LAWS, *Report*. Washington 1955.
4. C. KAYSEN AND D. F. TURNER, *Antitrust Policy: An Economic and Legal Analysis*. Cambridge 1959.
5. L. S. KEYES, Review of Kayesen and Turner [4], *George Washington Law Rev.*, Oct. 1960, 29, 184-88.
6. —, "The Shoe Machinery Case and the Problem of the Good Trust," *Quart. Jour. Econ.*, May 1954, 68, 287-304.
7. J. W. MARKHAM, "Merger Policy Under the New Section 7: A Six-Year Appraisal," *Univ. Virginia Law Rev.*, May 1957, 43, 489-524.
8. *United States v. Bethlehem Steel Corporation and The Youngstown Sheet and Tube Company*, 157 F. Supp. 877 (1958).
9. *United States v. Bethlehem Steel Corporation and The Youngstown Sheet and Tube Company*, 168 F. Supp. 576 (1958).

10. *United States v. E. I. duPont de Nemours and Co.*, 351 U.S. 377 (1956).
11. *United States v. E. I. duPont de Nemours and Co.*, 353 U.S. 586 (1957).
12. U. S. Senate Report No. 1775, 81st Cong., 2d Sess., 1950. *Amending Act to Supplement Existing Laws Against Unlawful Restraints and Monopolies*.

A Theory of Optimum Currency Areas

It is patently obvious that periodic balance-of-payments crises will remain an integral feature of the international economic system as long as fixed exchange rates and rigid wage and price levels prevent the terms of trade from fulfilling a natural role in the adjustment process. It is, however, far easier to pose the problem and to criticize the alternatives than it is to offer constructive and feasible suggestions for the elimination of what has become an international disequilibrium system.¹ The present paper, unfortunately, illustrates that proposition by cautioning against the practicability, in certain cases, of the most plausible alternative: a system of national currencies connected by flexible exchange rates.

A system of flexible exchange rates is usually presented, by its proponents,² as a device whereby depreciation can take the place of unemployment when the external balance is in deficit, and appreciation can replace inflation when it is in surplus. But the question then arises whether all existing national currencies should be flexible. Should the Ghanaian pound be freed to fluctuate against all currencies or ought the present sterling-area currencies remain pegged to the pound sterling? Or, supposing that the Common Market countries proceed with their plans for economic union, should these countries allow each national currency to fluctuate, or would a single currency area be preferable?

The problem can be posed in a general and more revealing way by defining a currency area as a domain within which exchange rates are fixed and asking: What is the appropriate domain of a currency area? It might seem at first that the question is purely academic since it hardly appears within the realm of political feasibility that national currencies would ever be abandoned in favor of any other arrangement. To this, three answers can be given: (1) Certain parts of the world are undergoing processes of economic integration and disintegration, new experiments are being made, and a conception of what constitutes an optimum currency area can clarify the meaning of these experiments. (2) Those countries, like Canada, which have experimented with flexible exchange rates are likely to face particular problems which the theory of *optimum* currency areas can elucidate if the national currency area does not coincide with the optimum currency area. (3) The idea can be used to illustrate certain functions of currencies which have been inadequately treated in the economic literature and which are sometimes neglected in the consideration of problems of economic policy.

¹ I have analyzed this system in some detail in [7].

² See, for example [1] [3] [5].

I. *Currency Areas and Common Currencies*

A single currency implies a single central bank (with note-issuing powers) and therefore a potentially elastic supply of interregional means of payments. But in a currency area comprising more than one currency the supply of international means of payment is conditional upon the cooperation of many central banks; no central bank can expand its own liabilities much faster than other central banks without losing reserves and impairing convertibility.³ This means that there will be a major difference between adjustment within a currency area which has a single currency and a currency area involving more than one currency; in other words there will be a difference between interregional adjustment and international adjustment even though exchange rates, in the latter case, are fixed.

To illustrate this difference consider a simple model of two entities (regions or countries), initially in full employment and balance-of-payments equilibrium, and see what happens when this equilibrium is disturbed by a shift of demand from the goods of entity B to the goods of entity A. Assume that money wages and prices cannot be reduced in the short run without causing unemployment, and that monetary authorities act to prevent inflation.

Suppose first that the entities are countries with national currencies. The shift of demand from B to A causes unemployment in B and inflationary pressure in A.⁴ To the extent that prices are allowed to rise in A the change in the terms of trade will relieve B of some of the burden of adjustment. But if A tightens credit restrictions to prevent prices from rising all the burden of adjustment is thrust onto country B; what is needed is a reduction in B's real income and if this cannot be effected by a change in the terms of trade—because B cannot lower, and A will not raise, prices—it must be accomplished by a decline in B's output and employment. The policy of surplus countries in restraining prices therefore imparts a recessive tendency to the world economy on fixed exchange rates or (more generally) to a currency area with many separate currencies.⁵

Contrast this situation with that where the entities are regions within a closed economy lubricated by a common currency; and suppose now that the national government pursues a full-employment policy. The shift of demand from B to A causes unemployment in region B and inflationary pressure in region A, and a surplus in A's balance of payments.⁶ To correct the unemployment in B the monetary authorities increase the money supply. The monetary expansion, however, aggravates inflationary pressure in region A: indeed, the

³ More exactly, the rates at which central banks can expand monetary liabilities depend on income elasticities of demand and output elasticities of supply.

⁴ For present purposes inflation is defined as a rise in the prices of home-produced goods.

⁵ The tendency of surplus countries to control (what is, from a national point of view) inflation can be amply documented from United States and French policy in the 1920's and West Germany policy today. But it is unfortunate that a simple change in world relative prices is interpreted, in the surplus countries, as inflation.

⁶ Instructive examples of balance-of-payments problems between different regions of the United States can be found in [2, Ch. 14] For purposes of this paper regions are defined as areas within which there is factor mobility, but between which there is factor immobility.

principal way in which the monetary policy is effective in correcting full employment in the deficit region is by raising prices in the surplus region, turning the terms of trade against B. Full employment thus imparts an inflationary bias to the multiregional economy or (more generally) to a currency area with common currency.

In a currency area comprising different countries with national currencies the pace of employment in deficit countries is set by the willingness of surplus countries to inflate. But in a currency area comprising many regions and a single currency, the pace of inflation is set by the willingness of central authorities to allow unemployment in deficit regions.

The two systems could be brought closer together by an institutional change: unemployment could be avoided in the world economy if central banks agreed that the burden of international adjustment should fall on surplus countries, which would then inflate until unemployment in deficit countries is eliminated; or a world central bank could be established with power to create an international means of payment. But a currency area of either type cannot prevent both unemployment and inflation among its members. The fault lies not with the type of currency area, but with the domain of the currency area. The optimum currency area is not the world.

II. *National Currencies and Flexible Exchange Rates*

The existence of more than one currency area in the world implies (by definition) variable exchange rates. In the international trade example, if demand shifts from the products of country B to the products of country A, a depreciation by country B or an appreciation by country A would correct the external imbalance and also relieve unemployment in country B and restrain inflation in country A. This is the most favorable case for flexible rates based on national currencies.

Other examples, however, might be equally relevant. Suppose that the world consists of two countries, Canada and the United States, each of which has separate currencies. Also assume that the continent is divided into two regions which do not correspond to national boundaries—the East, which produces goods like cars, and the West, which produces goods like lumber products. To test the flexible-exchange-rate-argument in this example assume that the United States dollar fluctuates relative to the Canadian dollar, and that an increase in productivity (say) in the automobile industry causes an excess demand for lumber products and an excess supply of cars.

The immediate impact of the shift in demand is to cause unemployment in the East and inflationary pressure in the West, and a flow of bank reserves from the East to the West because of the former's regional balance-of-payments deficit. To relieve the unemployment in the East the central banks in both countries would have to expand the national money supplies, or to prevent inflation in the West, contract the national money supplies. (Meanwhile the Canada-United States exchange rate would move to preserve equilibrium in the national balances.) Thus, unemployment can be prevented in both countries, but only at the expense of inflation; or, inflation can be re-

strained in both countries but at the expense of unemployment; or, finally, the burden of adjustment can be shared between East and West with some unemployment in the East and some inflation in the West. But both unemployment and inflation cannot be escaped. The flexible exchange rate system does not serve to correct the balance-of-payments situation between the two regions (which is the essential problem) although it will do so between the two countries; it is therefore not necessarily preferable to a common currency or national currencies connected by fixed exchange rates.

III. *Regional Currency Areas and Flexible Exchange Rates*

The preceding example does not destroy the argument for flexible exchange rates, but it might severely impair the relevance of the argument if it is applied to national currencies. The logic of the argument can in fact be rescued if national currencies are abandoned in favor of regional currencies.

To see this suppose that the "world" reorganizes currencies so that Eastern and Western dollars replace Canadian and United States dollars. Now if the exchange rate between the East and the West were pegged, a dilemma would arise similar to that discussed in the first section. But if the East-West exchange rate were flexible, then an excess demand for lumber products need cause neither inflation nor unemployment in either region. The Western dollar appreciates relative to the Eastern dollar thus assuring balance-of-payments equilibrium, while the Eastern and Western central banks adopt monetary policies to ensure constancy of effective demand in terms of the regional currencies, and therefore stable prices and employment.

The same argument could be approached from another direction. A system of flexible exchange rates was originally propounded as an alternative to the gold-standard mechanism which many economists blamed for the world-wide spread of depression after 1929. But if the arguments against the gold standard were correct, then why should a similar argument not apply against a common currency system in a multiregional country? Under the gold standard depression in one country would be transmitted, through the foreign-trade multiplier, to foreign countries. Similarly, under a common currency, depression in one region would be transmitted to other regions for precisely the same reasons. If the gold standard imposed a harsh discipline on the national economy and induced the transmission of economic fluctuations, then a common currency would be guilty of the same charges; interregional balance-of-payments problems are invisible, so to speak, precisely because there is no escape from the self-adjusting effects of interregional money flows. (It is true, of course, that interregional liquidity can always be supplied by the national central bank, whereas the gold standard and even the gold-exchange standard were hampered, on occasion, by periodic scarcities of internationally liquid assets; but the basic argument against the gold standard was essentially distinct from the liquidity problem.)

Today, if the case for flexible exchange rates is a strong one, it is, in logic, a case for flexible exchange rates based on *regional* currencies, not on national currencies. The optimum currency area is the region.

IV. *A Practical Application*

The theory of international trade was developed on the Ricardian assumption that factors of production are mobile internally but immobile internationally. Williams, Ohlin, Iversen and others, however, protested that this assumption was invalid and showed how its relaxation would affect the real theory of trade. I have tried to show that its relaxation has important consequences also for the monetary theory of trade and especially the theory of flexible exchange rates. The argument for flexible exchange rates based on national currencies is only as valid as the Ricardian assumption about factor mobility. If factor mobility is high internally and low internationally a system of flexible exchange rates based on national currencies might work effectively enough. But if regions cut across national boundaries or if countries are multiregional then the argument for flexible exchange rates is only valid if currencies are reorganized on a regional basis.

In the real world, of course, currencies are mainly an expression of national sovereignty, so that actual currency reorganization would be feasible only if it were accompanied by profound political changes. The concept of an optimum currency area therefore has direct practical applicability only in areas where political organization is in a state of flux, such as in ex-colonial areas and in Western Europe.

In Western Europe the creation of the Common Market is regarded by many as an important step toward eventual political union, and the subject of a common currency for the six countries has been much discussed. One can cite the well-known position of J. E. Meade [4, pp. 385-86], who argues that the conditions for a common currency in Western Europe do not exist, and that, especially because of the lack of labor mobility, a system of flexible exchange rates would be more effective in promoting balance-of-payments equilibrium and internal stability; and the apparently opposite view of Tibor Scitovsky [9, Ch. 2]¹ who favors a common currency because he believes that it would induce a greater degree of capital mobility, but further adds that steps must be taken to make labor more mobile and to facilitate supranational employment policies. In terms of the language of this paper Meade favors national currency areas while Scitovsky gives qualified approval to the idea of a single currency area in Western Europe.

In spite of the apparent contradiction between these two views, the concept of optimum currency areas helps us to see that the conflict reduces to an empirical rather than a theoretical question. In both cases it is implied that an essential ingredient of a common currency, or a single currency area, is a high degree of factor mobility; but Meade believes that the necessary factor mobility does not exist, while Scitovsky argues that labor mobility must be improved and that the creation of a common currency would itself stimulate capital mobility. In other words neither writer disputes that the optimum currency area is the region—defined in terms of internal factor mobility and external factor immobility—but there is an implicit difference in views on the

¹ These statements of course cannot do full justice to the arguments of Meade and Scitovsky.

precise degree of factor mobility required to delineate a region. The question thus reduces to whether or not Western Europe can be considered a single region, and this is essentially an empirical problem.

V. Upper Limits on the Number of Currencies and Currency Areas

A dilemma now arises: Factor mobility (and hence the delineation of regions) is most usefully considered a relative rather than an absolute concept, with both geographical and industrial dimensions, and it is likely to change over time with alterations in political and economic conditions. If, then, the goals of internal stability are to be rigidly pursued, it follows that the greater is the number of separate currency areas in the world, the more successfully will these goals be attained (assuming, as always, that the basic argument for flexible exchange rates per se is valid). But this seems to imply that regions ought to be defined so narrowly as to count every minor pocket of unemployment arising from labor immobility as a separate region, each of which should apparently have a separate currency!

Such an arrangement hardly appeals to common sense. The suggestion reflects the fact that we have, thus far, considered the reasons for keeping currency areas small, not the reasons for maintaining or increasing their size. In other words we have discussed only the stabilization argument, to which end it is preferable to have many currency areas, and not the increasing costs which are likely to be associated with the maintenance of many currency areas.

It will be recalled that the older economists of the nineteenth century were internationalists and generally favored a world currency. Thus, John Stuart Mill wrote [6, p. 176]:

. . . So much of barbarism, however, still remains in the transactions of most civilised nations, that almost all independent countries choose to assert their nationality by having, to their own inconvenience and that of their neighbours, a peculiar currency of their own.

Mill, like Bagehot and others, was concerned with the costs of valuation and money-changing, not stabilization policy, and it is readily seen that these costs tend to increase with the number of currencies. Any given money qua numeraire or unit of account fulfills this function less adequately if the prices of foreign goods are expressed in terms of foreign currency and must then be translated into domestic currency prices. Similarly, money in its role of medium of exchange is less useful if there are many currencies; although the costs of currency conversion are always present, they loom exceptionally large under inconvertibility or flexible exchange rates. (Indeed, in a hypothetical world in which the number of currencies equaled the number of commodities, the usefulness of money in its roles of unit of account and medium of exchange would disappear, and trade might just as well be conducted in terms of pure barter.) Money is a convenience and this restricts the optimum number of currencies. In terms of this argument alone the optimum currency area is the world, regardless of the number of regions of which it is composed.

There are two other factors which would inhibit the creation of an arbitrarily large number of currency areas. In the first place markets for foreign

exchange must not be so thin that any single speculator (perhaps excepting central banks) can affect the market price; otherwise the speculation argument against flexible exchange rates would assume weighty dimensions. The other argument limiting "Balkanization" concerns the very pillar on which the flexible exchange-rate argument rests. The thesis of those who favor flexible exchange rates is that the community in question is not willing to accept variations in its real income through adjustments in its money wage rate or price level, but that it is willing to accept virtually the same changes in its real income through variations in the rate of exchange. In other words it is assumed that unions bargain for a money rather than a real wage, and adjust their wage demands to changes in the cost of living, if at all, only if the cost-of-living index excludes imports. Now as the currency area grows smaller and the proportion of imports in total consumption grows, this assumption becomes increasingly unlikely. It may not be implausible to suppose that there is some degree of money illusion in the bargaining process between unions and management (or frictions and lags having the same effects), but it is unrealistic to assume the extreme degree of money illusion that would have to exist in small currency areas. Since the necessary degree of money illusion becomes greater the smaller are currency areas, it is plausible to conclude that this also imposes an upper limit on the number of currency areas.

VI. *Concluding Argument*

The subject of flexible exchange rates can logically be separated into two distinct questions. The first is whether a system of flexible exchange rates can work effectively and efficiently in the modern world economy. For this to be possible it must be demonstrated that: (1) an international price system based on flexible exchange rates is dynamically stable after taking speculative demands into account; (2) the exchange rate changes necessary to eliminate normal disturbances to dynamic equilibrium are not so large as to cause violent and reversible shifts between export and import-competing industries (this is not ruled out by stability); (3) the risks created by variable exchange rates can be covered at reasonable costs in the forward markets; (4) central banks will refrain from monopolistic speculation; (5) monetary discipline will be maintained by the unfavorable political consequences of continuing depreciation, as it is to some extent maintained today by threats to the levels of foreign exchange reserves; (6) reasonable protection of debtors and creditors can be assured to maintain an increasing flow of long-term capital movements; and (7) wages and profits are not tied to a price index in which import goods are heavily weighted. I have not explicitly discussed these issues in my paper.

The second question concerns how the world should be divided into currency areas. I have argued that the stabilization argument for flexible exchange rates is valid only if it is based on regional currency areas. If the world can be divided into regions within each of which there is factor mobility and between which there is factor immobility, then each of these regions should have a separate currency which fluctuates relative to all other currencies. This carries the argument for flexible exchange rates to its logical conclusion.

But a region is an economic unit while a currency domain is partly an ex-

pression of national sovereignty. Except in areas where national sovereignty is being given up it is not feasible to suggest that currencies should be re-organized; the validity of the argument for flexible exchange rates therefore hinges on the closeness with which nations correspond to regions. The argument works best if each nation (and currency) has internal factor mobility and external factor immobility. But if labor and capital are insufficiently mobile within a country then flexibility of the external price of the national currency cannot be expected to perform the stabilization function attributed to it, and one could expect varying rates of unemployment or inflation in the different regions. Similarly, if factors are mobile across national boundaries then a flexible exchange system becomes unnecessary, and may even be positively harmful, as I have suggested elsewhere.⁸

Canada provides the only modern example where an advanced country has experimented with flexible exchange rates. According to my argument the experiment should be largely unsuccessful as far as stabilization is concerned. Because of the factor immobility between regions an increase in foreign demand for the products of one of the regions would cause an appreciation of the exchange rate and therefore increased unemployment in the remaining regions, a process which could be corrected by a monetary policy which aggravated inflationary pressures in the first region; every change in demand for the products in one region is likely to induce opposite changes in other regions which can not be entirely modified by national stabilization policies. Similarly the high degree of external capital mobility is likely to interfere with stabilization policy for completely different reasons: to achieve internal stability the central bank can alter credit conditions but it is the change in the exchange rate rather than the alteration in the interest rate which produces the stabilizing effect; this indirectness conduces to a cyclical approach to equilibrium. Although an explicit empirical study would be necessary to verify that the Canadian experiment has not fulfilled the claims made for flexible exchange rates, the *prima facie* evidence indicates that it has not. It must be emphasized, though, that a failure of the Canadian experiment would cast doubt only on the effectiveness of a flexible exchange system in a multiregional country, not on a flexible exchange system in a unitary country.⁹

ROBERT A. MUNDELL*

⁸In my paper, "The Monetary Dynamics of International Adjustment Under Fixed and Flexible Exchange Rates," [8], I advanced the argument that stabilization policy would be more difficult under fixed exchange rates if short-term capital were immobile than if it were mobile, and more difficult under flexible exchange rates if capital were mobile than if it were immobile. Although the method of analysis was fundamentally different the conclusions support the hypothesis of this paper that the fixed-exchange-rate system is better within areas where factors are mobile and the flexible-exchange-rate system is better for areas between which factors are immobile. The argument of my other paper imposes an additional argument against increasing the number of currencies.

⁹Other economists have advanced arguments in favor of Balkanization of multiregional countries (see for example, A. D. Scott [10]); and the argument for regional currency areas adds to the list; but, as Scott is careful to emphasize, no country can make such decisions on purely economic grounds.

*The author is an economist in the Special Research Section of the International Monetary Fund.

REFERENCES

1. MILTON FRIEDMAN, "The Case for Flexible Exchange Rates," *Essays in Positive Economics*. Chicago 1953.
2. S. E. HARRIS, *Interregional and International Economics*. New York 1957.
3. F. L. LUTZ, "The Case for Flexible Exchange Rates," Banca Naz. del Lavoro, Dec. 1954.
4. J. E. MEADE, "The Balance of Payments Problems of a Free Trade Area," *Econ. Jour.*, Sept. 1957, 67, 379-96.
5. —, "The Case for Variable Exchange Rates," *Three Banks Rev.*, Sept. 1955.
6. J. S. MILL, *Principles of Political Economy*, Vol. II. New York 1894.
7. R. A. MUNDELL, "The International Disequilibrium System," *Kyklos*, 1961 (2), 14, 153-72.
8. —, "The Monetary Dynamics of International Adjustment under Fixed and Flexible Exchange Rates," *Quart. Jour. Econ.*, May 1960, 74, 227-57.
9. TIBOR SCITOVSKY, *Economic Theory and Western European Integration*. Stanford 1958.
10. A. D. SCOTT, "A Note on Grants in Federal Countries," *Economica*, Nov. 1950, 17 (N.S.), 416-22.

Institutional Affiliation of the Contributors to Three Professional Journals

Two analyses of the institutional affiliations of authors of economics papers have appeared in past issues of the *American Economic Review*. One made some years ago referred to the origins of the participants (excluding the discussants) in the programs of the American Economic Association meetings for the five-year period 1950-54 [2]. A more recent one analyzed the affiliations of the contributors to the AER (apart from the Proceedings) for the decade 1950-59 [1]. Some interesting observations can be made by comparing the two studies. The omission of some schools in both cases is rather surprising. Fusfeld's list of the institutions who contributed two or more papers to the American Economic Association meetings over the five-year period did not include schools like Princeton University or Johns Hopkins University. Cleary and Edwards' list of institutions who aggregated 100 or more pages in the AER over the ten-year period did not mention schools like Columbia University or Duke University. With regard to the ranking of the institutions according to the volume of their aggregate contribution, the results are equally striking. In the case of the Proceedings, Harvard University, the University of California, the University of Chicago, and Columbia University top the list. In the case of the regular quarterly issues of the AER, the University of California, the Massachusetts Institute of Technology, Stanford University, and the University of Chicago ranked as the most important originators. From the four institutions that did not repeat in the top four, Columbia was conspicuously absent from the Cleary and Edwards' list while Harvard University

ranked ninth out of eighteen institutions. In Fusfeld's list of fifteen institutions, on the other hand, Stanford University ranked ninth while the Massachusetts Institute of Technology was eleventh. The purpose of this note is to attempt to bridge the gap between the two analyses by extending the inquiry to include two other professional journals. The *Journal of Political Economy* and the *Quarterly Journal of Economics* were chosen because they both cover approximately the same general sphere of interest as the AER.

In the decade 1950-59 there were 298 contributors to the JPE affiliated with 100 different institutions and 329 contributors to the QJE affiliated with 109 institutions.¹ The contributors included in this analysis are the authors of articles, review articles, notes, communications, comments and memorials. Consequently, our definition of a contribution (or title) excludes the corrections, replies and rejoinders that the original author made. Likewise ordinary book reviews were not included. Defined as above, the JPE included 352 titles encompassing 4652 pages and the QJE 368 titles with 6291 pages. The averages² for the JPE were 15.6 pages per author and 1.2 titles per author, while for the QJE were 19.1 and 1.1 respectively. The share of the top 25 contributors in the JPE was 1295 pages and 79 titles, which amounted to 27.8 per cent of the total pages and 22.4 per cent of the total titles. For the QJE the top 25 contributors were responsible for 1357 pages and 57 titles, or 21.6 and 15.5 per cent of the respective totals.³ This indicates a somewhat heavier reliance on the top 25 authors in the case of the JPE rather than in the case of the QJE or the AER. In the latter, the top 25 contributors accounted for 20 per cent of the total pages and 15 per cent of the total titles [1, p. 1011].

The problem of co-authorship made aggregation of the contributions that were associated with each institution complicated. The solution of Cleary and Edwards was followed and a page rather than a title count was taken. When a contribution was written by more than one author associated with different institutions, the number of pages was divided equally among the authors' institutions. The institutions from which contributions aggregating more than 100 pages originated are shown in Tables 1 and 2 for the JPE and QJE respectively.

As it might be expected, the University of Chicago dominated the contributions to the JPE with 15.6 per cent of the total pages while Harvard University dominated the contributions to the QJE with 14.5 per cent. This heavy concentration of authors in one institution for each journal leaves its imprint on the picture given by the share that is contributed by the top four institutions taken together. In the case of both the JPE and the QJE, authors at four institutions contributed nearly one-third of the total pages. The same

¹ A total of 554 different authors contributed the titles of the two journals. The number of authors who had contributions in both the JPE and QJE was 73.

² These averages are simple arithmetic means.

³ Nobody appeared in both lists among the top 25 contributors. Similarly, none of the top 25 contributors for any list collaborated with each other; although six of the 25 for the JPE list collaborated with some of the 273 others and five of the 25 in the QJE list collaborated with some of the 304 others.

TABLE 1—INSTITUTIONAL AFFILIATION OF AUTHORS WHO TOGETHER
CONTRIBUTED 100 PAGES OR MORE TO THE JPE, 1950-59*

Institution	Number of Pages	Per Cent of Total Pages
University of Chicago	726	15.6
Stanford University	205	4.4
Columbia University	203	4.4
Massachusetts Institute of Technology	163	3.5
Duke University	161	3.5
University of Wisconsin	139	3.0
University of California, Berkeley	132	2.8
Northwestern University	123	2.6
Federal Government and Semigovernmental Organizations	112	2.4
Vanderbilt University	111	2.4
University of California, Los Angeles	107	2.3
University of Washington	105	2.3
	2287	49.2
Others	2365	50.8
Total	4652	100.0

* Computed by dividing the number of pages in each contribution by the number of authors and adding the shares according to the institutional affiliation of each author.

TABLE 2—INSTITUTIONAL AFFILIATION OF AUTHORS WHO TOGETHER
CONTRIBUTED 100 PAGES OR MORE TO THE QJE, 1950-59*

Institution	Number of Pages	Per Cent of Total Pages
Harvard University	915	14.5
University of California, Berkeley	452	7.2
Massachusetts Institute of Technology	317	5.0
Columbia University	212	3.4
Princeton University	174	2.8
Carnegie Institute of Technology	168	2.7
Federal Government and Semigovernmental Organizations	161	2.5
University of Michigan	151	2.4
University of Wisconsin	130	2.1
Stanford University	129	2.1
University of Washington	111	1.8
Vanderbilt University	109	1.7
Federal Reserve System	104	1.6
	3133	49.8
Others	3158	50.2
Total	6291	100.0

* Computed by dividing the number of pages in each contribution by the number of authors and adding the shares according to the institutional affiliation of each author.

share of total titles was contributed by authors at four institutions in the case of the Proceedings. In the AER, however, the four institutions that topped the list accounted for only a little over one-fifth of the total pages. It so appears that there was more concentration of authors in a small number of institutions in the case of the Proceedings, the JPE and the QJE than in the case of the AER.

Table 3 shows the institutions that appeared in all three lists, having contributed 100 pages or more to each of the three journals, the AER, the JPE and the QJE.

TABLE 3—INSTITUTIONAL AFFILIATION OF AUTHORS WHO TOGETHER
CONTRIBUTED 100 PAGES OR MORE TO THE AER, JPE AND QJE, 1950-59

Institution	Number of Total Pages	Per Cent of Total Pages
University of California, Berkeley	976	5.9
Massachusetts Institute of Technology	843	5.1
Stanford University	643	3.9
University of Wisconsin	427	2.6
Vanderbilt University	332	2.0
Total	3221	19.5
Total in Three Journals	16,607	100.0

Source: Tables 1 and 2; R. Cleary and J. Edwards [1, Table 1].

The University of Chicago and Harvard University do not appear in Table 3 because each was absent from the list of institutions originating contributions to the journal associated with the other institution.

Table 4 purports to correct for this bias. It shows the institutions that contributed an aggregate of 300 pages or more to the three journals, whether they appeared in all three lists or not. Sixteen institutions accounted for a little over one-half of the total pages contributed in the AER, JPE and QJE together.

The examination of three professional journals, rather than one, confirms the results of Fusfeld's analysis. All four institutions that contributed about one-third of the papers in the case of the Proceedings in the period 1950-54, appeared also in the list of six institutions that contributed just less than one-third of the total pages in the three professional journals in the period 1950-59. Fusfeld, on the basis of the above results, raised the implication of parochialism against the program chairmen of the American Economic Association meetings [2, p. 644]:

It is the feeling of this observer that the methods of selecting speakers are inadequate. The chairmen of the various sessions have no way of learning, aside from hearsay, what economists outside the large universities are working on; and people working in a particular field have no way of learning what subjects are to be taken up in next year's meet-

TABLE 4—INSTITUTIONAL AFFILIATION OF AUTHORS WHO CONTRIBUTED 300 PAGES OR MORE TO THE AER, JPE AND QJE COMBINED, 1950-59

Institution	Number of Total Pages	Per Cent of Total Pages
Harvard University	1184	7.1
University of Chicago	1018	6.1
University of California, Berkeley	976	5.9
Massachusetts Institute of Technology	843	5.1
Stanford University	643	3.9
Columbia University	497	3.0
University of Michigan	462	2.8
University of Wisconsin	427	2.6
Federal Government and Semigovernmental Organizations	394	2.4
Carnegie Institute of Technology	359	2.2
Yale University	355	2.1
University of California, Los Angeles	353	2.1
Princeton University	347	2.1
Federal Reserve System	342	2.0
Johns Hopkins University	334	2.0
Vanderbilt University	332	2.0
Total	8,866	53.4
Total in Three Journals	16,607	100.0

Source: Tables 1 and 2; R. Cleary and J. Edwards [1, Table 1].

ing or who the chairmen of the sessions will be. In the absence of an effective clearing house it is small wonder that there is a tendency for the chairmen to stick close to home, to ask people whom they know to deliver papers, to promote the interests of graduate students who are refining some of the chairman's ideas, and in general to create the kind of situation that has tended to prevail in the Association's recent meetings.

It is conceivable that the same situation might be ascribed to the case of the three professional journals, as well. However, since the contributions to the journals are submitted and judged on their actual merits rather than invited, there is *prima-facie* evidence for rejecting the parochial hypothesis.⁴ The explanation of the positive correlation between the size of the university and its contribution record should be sought elsewhere. If "large" universities have larger departments of economics, we should expect them to have a higher publication record in the professional journals. Alternatively, it might well be, as Fusfeld points out, that the correlation exists because large institutions provide their staff with more time, funds, and facilities for research, or because they attract the best people in the profession who have the highest

⁴ On the other hand, Tables 1 and 2 provide evidence of another type of discrimination. It appears that authors at Chicago and Harvard are inclined to give preference for the publication of their contributions to the journals of their respective institutions. This, however, is the reverse of Fusfeld's case of parochialism.

propensity for publication. With the data available, a single cause and effect relationship cannot be established.

PAN A. YOTOPOULOS*

REFERENCES

1. F. R. CLEARY AND D. J. EDWARDS, "The Origins of the Contributors to the A. E. R. During the 'Fifties," *Am. Econ. Rev.*, Dec. 1960, 50, 1011-14.
2. R. FUSFELD, "The Program of the American Economic Association Meetings," *Am. Econ. Rev.*, Sept. 1956, 46, 642-44.

*The author is instructor in economics at the University of Wisconsin, Milwaukee. In gathering data for this note, the contribution of Wayne DeBruin, the author's research assistant, was valuable and is greatly appreciated.

BOOK REVIEWS

General Economics; Methodology

Potentials of the American Economy—Selected Essays of Sumner H. Slichter. Edited by JOHN T. DUNLOP. Cambridge: Harvard University Press, 1961. Pp. xxiv, 617. \$7.50.

For several reasons, this is an important book. The most obvious of these is the sheer convenience of having twenty-eight essays that originally appeared in scattered sources brought together within the compass of a single volume. But, of course, mere mechanical convenience can hardly impart quality to any publication unless it possesses substantive value. The essays measure the development of one of the best-known economic analysts through that portion of the twentieth century which we have now passed. Also the other side of the value of this collection is that it reveals important glimpses of the unfolding drama of four rather special decades of economic history. There are essays written during the roaring 'twenties, the drab 'thirties, the tense military 'forties, and the still tense but cold 'fifties.

Hence, these papers have to be viewed not only as reflecting the lifetime development of an alert mind, but as a partial record of the events which passed before it. For Slichter was always current. He epitomizes what Wesley Mitchell had in mind when he wrote of the classical economists, "The economic theorists who have counted most in the development of thought have been men who have been very deeply concerned with the problems that troubled their generations. Their theories have been attempts to deal scientifically with these problems, to point out promising means of practical action." Of Slichter it might be said that he was never "in danger of presenting a mere defense of the existing situation"; rather he constantly sought to deal "definitely with what ought to be done."

Such yearning for immediate effectiveness is a source of great strength. But, although intense effort to capture the meaning of the rapidly moving stream of current events may lead to systematic classification of the numerous complexities near at hand, it may encourage some neglect of more fundamental forces at a distance. Thus it has been that the writings of the classical economists have had to be re-examined not only for the shrewd observations they made but to identify in retrospect what they did not see. So it will be with Slichter. His heritage is not in the unfailing accuracy of all of his observations but rather in his opening of many gateways to new learning.

The book is divided into four sections. The first consists of five papers under the caption of "The American Economy." The second and third sections, each of which contains eight essays, carry the titles, "The Economic Outlook" and "Industrial Relations." Seven papers, one of which is Slichter's 1941 Presidential address to the American Economic Association, make up the last

section under the label "Economic Analysis and Policy Issues." These headings are fairly representative of the contents of each of the sections, although the reader may suspect that "policy issues" must have found their way into almost everything that Slichter was interested in writing. For those who wish to go beyond the specific contents of this volume, there is a complete list of Slichter's writings at the end of the volume. This bibliography occupies no less than 21 pages and is suggestive of the great intellectual vigor of the man. If we overlook book reviews, many public addresses, and the early (1912-15) contribution to the U.S. Commission on Industrial Relations, Slichter's life record includes not less than ten books and over 350 published articles. Many of the latter were brief comments in popular periodicals or commercial newspapers with some overlap in subject matter, but over 50 were of substantial length and appeared in the more technical professional journals.

What was the central driving force in a life that was to bring forth so large an output? If this reviewer's reading of the essays has been correct, the one feature of the life and works of the late Sumner Slichter that deserves central emphasis is his unfailing confidence, not only in himself, but in the U. S. economy of which he was so much a part. It was not, however, an unthinking confidence supported by a naive faith that brooked no criticism of an existing structure. Rather its perpetual strength was in part maintained by continuing scrutiny of the unfolding scene. Always he saw much that was wrong to need correction, but he also found much to sustain hope. Even "The Immediate Unemployment Problem" of 1932 (pp. 57-72) is seen as one calling for various kinds of federal action, rather than despair. The promising prospect of what lies ahead appears to be a consideration that colors every page. Surely it was this unbounded confidence that must have been uppermost in the mind of the editor when he selected the title "Potentials of the American Economy."

It would be a serious mistake, however, to read the volume as a continuing development of a single theme. The structure of a book which records the development of a mind seeking to understand an economy in continuous motion, is a complicated matter. Hence a good rule to follow for reading each essay is to identify first the date of the original writing and then strive to interpret the content in terms of information which might have been available to the author at that time. Thus in 1932, when there was mass unemployment and only scant efforts at insurance or retirement plans, while speaking of technological unemployment, Slichter was to write (pp. 315-16):

We have developed institutions which subsidize change on an enormous scale and which cause it to occur far more rapidly than in any previous age. And yet we have failed for the most part to recognize that change presents a major social problem; we have made almost no effort to keep down the cost of change or to prevent change from occurring at a wastefully rapid rate.

In 1957, after nearly a decade of high-level employment, it was a very different note that dominated his address on "Technology and the Great Ameri-

can Experiment" at the Annual Engineers' Day Dinner at the University of Wisconsin. Could he have lived to see the increasing "structural unemployment" in textiles, coal, and automobiles during 1960-61, he might have voiced again views similar to those expressed in 1932.

This reviewer still remains skeptical about Slichter's theme that "collective bargaining is responsible for the economy's capacity to generate money income." This was among the ideas developed during the last year of his life. The point is related to his earlier emphasis on the "inflationary bias of wage fixing arrangements in the American labor market." In both cases his emphasis seems to be misplaced. The views expressed in these articles (pp. 379-406; 416-33) are certainly different from those set forth in Charles Schultze's Study Paper for the Joint Economic Committee as well as by Alvin Hansen later when he seems to rely upon Schultze for development of some of his own views. Would Slichter's position have been changed if he could have seen the subsequent careful analysis in *Recent Inflation in the United States*? Here Schultze stated that,

The resulting inflation [of 1955-57] can be explained neither in terms of an overall excess of money demand nor an autonomous upward push of wages. Rather it originates in an excess demand in particular sectors and is spread to the rest of the economy by the cost mechanism. It is a characteristic of the resource allocation process in an economy with rigidities in its price structure. It is impossible to analyze such an inflation by looking only at aggregate data.

We may be confident Slichter was never one to look "only at aggregate data." Neither was he one to fail to observe the important findings of others. He died at sixty-seven still in full vigor, and no less than eighteen articles under his pen reached the printing press during 1959 although he lived for only the first three quarters of that year. It was a tragedy for the profession of economics that such a life could not have been continued for the full threescore and ten. The tragedy is emphasized by the fact that he died during the very month when the Government Printing Office issued *Recent Inflation in the United States*. At the speed with which Slichter absorbed new findings, another six months of life might have been ample for him to have modified his views of collective bargaining as an "income generating force," and to encourage him to recall his presidential address when he said, "There is nothing fixed or inevitable about the way in which collective bargaining operates and the effects which it produces."

Also one cannot help wondering what Slichter might have concluded upon reading Hansen's autumn 1959 lectures at Haverford.¹ At that time Hansen was able to review the course of price movements, 1897-1913, in comparison with those of 1948-60 from a somewhat different vantage point than was available to Slichter in 1953 when he set forth the conclusion that "wage-fixing arrangements in the American labor market" had "an inflationary bias." Hansen's observation of the 2.5 per cent annual increase in the wholesale

¹ Alvin Hansen, *Economic Issues of the 1960's*, New York 1960, esp. pp. 15-30.

price index for the early period when trade unions were of a somewhat limited influence, compared with the mere $1\frac{1}{8}$ per cent annual rate of change for the later period after collective bargaining had spread across a considerably broader front, might well have caused Slichter to reconsider the conclusions he had expressed earlier. It is very clear that his incisively stated conclusions were never meant to stand permanently without regard to new evidence. Thus, although he wrote,

There is good reason to believe that breaking up unions would strengthen rather than weaken the monopolistic principle in the selling of labor,

on the very next page he could say (pp. 430-31),

Certainly one of the first questions to be answered is whether breaking up unions would increase or diminish their monopoly power. Only experience will give reliable answers and there is little experience that is in point. Nevertheless, careful studies of dual or rival unionism may shed some light on the matter.

Meyer Schapiro, Columbia University's critical student of the life and works of the nineteenth century impressionist painters, has suggested that in the early years their works show signs of a great vigor with variegated splashes of brilliant color but that some paintings made in later life tend toward regularity with more somber neutral tones. There is to be found no such shrinkage in the vigor or fading in the color of the works of Sumner Slichter. A crude indication of continuing vitality rises with the observation that the annual average number of articles coming from his pen during the last nine years of his life was indeed somewhat larger than during the decade of the 'forties. More important, of course, is the fact that his later writings continue to contain the same incisive analysis, the same kind of clear-cut conclusions as his earlier works. Always bold but never arrogant, always confident but never patronizing, his proposals continued to invite critical examination by others to the very end. It is as if Slichter were saying to his reader: "Here is the picture of the American economy as I see it, painted as clearly as I can do. If my vision is distorted, you show us the correct view. If the potential of tomorrow proves to be different than I now think it to be, show us what it is that I could not see." Hence, it is for other economic analysts, using the tools which he has left them or creating new ones when the old are proved inadequate, to demonstrate the real power of Sumner Slichter. This book lays the road open for many such undertakings. For a great teacher, there could hardly be a greater tribute.

C. L. CHRISTENSON

Indiana University

The Strategy of Conflict. By THOMAS C. SCHELLING. Cambridge: Harvard University Press, 1960. Pp. vii, 309. \$6.25.

Game theory is too important and too rich a topic to be left exclusively to the mathematicians. Though never stated quite so bluntly, this seems to be the central unifying theme of the present collection of essays. While abstract in

large part (even though minimally mathematical), Schelling's discussion is consistently rich in concrete illustration from a wide variety of applied fields, highly flexible as to institutional assumptions, and frequently concerned with empirical and contextual elements that emphasize game theory's roots in social science as well as in pure logic.

Although the incidental illustrations that enliven the analysis in a most stimulating way are drawn from many different forms of human (and even animal) behavior—from blackmail and extortion to maneuvering in traffic jams and the disciplining of children and pets—Schelling is clearly most concerned with the applications of game theory to international strategy. Thus problems of military deterrence, surprise attack, limited war, disarmament, and the like are the subject of substantial discussion in at least half of the book's ten chapters and in one of its three appendices. Indeed, the first chapter, on "the retarded science of international strategy," is described by the author as representing "the motivation and theme of the entire book." As he complains, study of this topic has been "supported on a scale that suggests that deterring the Russians from a conquest of Europe is about as important as enforcing the antitrust laws." This comment also helps explain the comparative neglect of game theory's applications to economics, despite the author's background in that field.

If it were not for the virtue of a short title, Schelling implies (pp. 16, 83 ff., and 89 n.) that his book might better have been called "the theory of interdependent decision." Thus he properly regards the zero-sum or constant-sum game as a limiting case that is of comparatively little interest for its own sake to the social scientist, since mixed-motive or variable-sum games involving both conflict and common interest have far greater social importance than games of pure conflict. He also accuses traditional game theorists—not altogether fairly, in my opinion—of an excessive preoccupation with the zero-sum game, even in their treatments of mixed-motive situations (pp. 83-84). He argues quite persuasively, however, that mixed-motive games have less in common with the pure-conflict species than with games of pure coordination, which have sometimes been erroneously dismissed as inherently trivial.

Although a number of interesting proposals of possible experiments are suggested, the only actual experimental results (pp. 54 ff.) concern a series of problems of tacit coordination, involving either common or partially divergent interests. To cite only the first and simplest example in each category, pairs of subjects were invited to name either "heads" or "tails" with the prospect of positive payoffs only if they named the same—equal payoffs in the first instance and symmetrically unequal payoffs in the second, such that one player would profit more from coordination on "heads" and the other from coordination on "tails." In both instances, tacit coordination on "heads" occurred appreciably more often than chance would have indicated had there been no mutual identification of a conventional primacy of that side of a coin; and that coordination was only slightly more frequent with equal than with unequal payoffs.

Schelling then goes on from his rudimentary experiments of this type to some

more ambitious conjectures about the process of agreement in explicit bargaining with the fullest communication. He holds, first, that such agreement involves an analogous "coordination of mutual expectations" as to what each thinks that the other thinks that each thinks . . . the other will allow. Second, he argues that these expectations may be focused by a wide variety of possible properties—including historical, aesthetic, legal, moral, and cultural ones, as well as the mathematical properties that have been exclusively emphasized by Nash, Braithwaite, and others. The operational character of Schelling's hypothesis is supported by a proposed series of experiments employing something like a lie detector to unveil "expectations" even when the subject might wish to conceal them.

The context of the foregoing is essentially unstructured or "moveless" bargaining. From a somewhat different standpoint (pp. 267 ff.), Schelling also argues that such a game, or one with a perfectly symmetrical move structure, "may not exist or, if it does, is of a different character from what has been generally supposed." Especially when such a game has a known termination point for the explicit bargaining and when its tacit form has a confidently predictable efficient solution, Schelling shows that it is likely to degenerate into the tacit game. On the other hand, he does not follow up the implications of alternative assumptions; so he seems to me to fall well short of demolishing the target altogether.

In general, Schelling's disposition is to emphasize the significance of strategic "moves." These may include steps taken by either party to improve or impair communications, measures that may similarly affect the enforcement of agreements, and especially efforts to achieve a "commitment"—whether of the unconditional type or of the conditional types represented by "threats" and "promises." In two chapters not previously published, he extends his basic analysis of commitments as pure strategies to the case of randomized threats and promises. It may be fruitful to make a threat with only a specified probability of fulfillment, for example, either to scale down the cost of executing a gratuitously large threat if it should fail or to make an excessively large one more credible.

Beyond this rather inadequate characterization of the scope and flavor of Schelling's discussion, it should be emphasized that much of its substance and its charm lies in the subtlety and the felicitousness with which the details of its central theses are worked out. The book as a whole assuredly deserves a wide audience both among specialists in game theory and also among social scientists interested in its applications.

ROBERT L. BISHOP

Massachusetts Institute of Technology

The Teaching of Elementary Economics. Edited by KENYON A. KNOPF AND JAMES H. STAUSS. New York: Holt, Rinehart and Winston, 1960. Pp. xl, 269. \$3.50.

The surge of interest in economic education that we are currently experiencing (witness the activities of the Joint Council on Economic Education, CED

National Task Force, AEA Committee on Economic Education) is based on a recognition of the need for a higher level of economic awareness and literacy among the voting population and public leadership of the country. At present "the most significant effort in popular economic education in the United States is the teaching of the college course in principles of economics"; but there is dissatisfaction with "present methods, content, and results" of the course. Can the encouragement and widespread discussion of "fresh, new ideas" help to bring about improvement? The economics department of Grinnell College, with the financial assistance of the Ford Foundation, decided to find out.

In 1957 Grinnell did a survey of elementary economics courses "to discover interesting innovations in teaching which might stimulate widespread restudying and rebuilding of the course." Based on 186 replies to a questionnaire, the Grinnell staff selected 10 representative teaching experiments, invited a number of critics to discuss them, and in the summer of 1958 brought 25 economists to the Merrill Center for Economics for a 10-day conference. *The Teaching of Elementary Economics* is a product of that conference.

The volume contains eleven papers (with brief editorial introductions), nine of which deal with specific experimental teaching techniques relating to course design, in-class and out-of-class activities, and a variety of what might be termed classroom gimmicks. The range of experiments is broad.

In "The Case-Method Approach," Warner and Fuchs of Columbia describe a second-semester elementary course which stresses "the application of specific concepts and tools of analysis" to concrete, "little-problem" situations. This in preference to organizing the course around broad economic theories or policy questions. By contrast, Senesh of Purdue ("Teaching Economics through the Problem-Solving Approach") orients his two-semester course for future social studies teachers to five socio-economic goals: growth, stability, security, freedom, and justice. His highly structured course, divided into motivating, development, and culminating phases, proceeds through six steps for each policy problem examined: discovery of symptoms, survey of various aspects, definition, measurement, analysis of causes, and investigation of solutions. The role of value judgments is stressed throughout.

Co-editor Kenyon Knopf describes an unusual experiment at Grinnell, in which a student may choose either or both of two problem-oriented, one-semester beginning courses: one centering on consumption (using a consumer economics text with other readings, but not presented as a "how to buy" course) and the other on labor problems (using a standard labor text).

Of great interest was the experiment at Oberlin reported by Kenneth Roose ("Student Papers and Independent Classes"). Proceeding from his assumption that "the fundamental objective in a college education is to encourage students to think for themselves and to continue their education after finishing college," Roose resolved to place more emphasis on student responsibility for learning. He gives no examinations, does not lecture. Students read a standard text, answer workbook questions for their own benefit, and write frequent, short papers (two typewritten pages). Approximately half of the class meetings are devoted to reading and student criticism of papers, in the absence of

the instructor. A similar "Experiment with Out-of-Class Periods" at Reed College is described by Carl Stevens.

Papers by John Maher ("The Economics Workshop at Wesleyan"), by Robert Voertman ("Michigan State Experiment in Teaching Macro-Economics with Intensive Use of Period Table and 'T' Account") and Jacob Schmookler ("Michigan State Experiment in Micro-Economics"), and by Ruby Turner Morris of Connecticut College ("The Use of Visual Aids")—a most persuasive one—describe a variety of stimulating teaching procedures.

The other two papers, both excellent contributions, are somewhat broader in scope: "Economics, Educational Philosophy, and Psychology" by Meno Lovenstein of Ohio State and "Teaching of Principles of Economics: Broad Issues" by Seymour Harris of Harvard. In addition "A Study of Facts about Elementary Economics Courses as Taught in 1956-57" appears in the appendix.

Following each paper is an anonymous, nonconsensual "Digest of Discussion of the Paper." The volume also contains a number of "Notes" contributed by several participants subsequent to the conference. In many ways these are of greater value to the reader—certainly they are more pointed—than the digests, which sometimes do little more than summarize the papers themselves. (Although readers are assured that "each participant made many significant contributions" to the discussions, the contributions of many of the better-known participants are nowhere specifically identifiable.) Space permits comment on only one of these notes, that of Lovenstein. In his paper he observes that "it is astonishing how little professional attention teachers of economics have given to the art of teaching and the educational process," and then goes on to describe a principles course involving the "very conscious" application of the principles of gestalt psychology (his course is organized around the three gestalts of scarcity, flows, and coordination systems) and pragmatic philosophy (including Dewey's theory of the nature of inquiry as "unfolding exploration"). Little discussion was reported on his paper, except that "there is lack of evidence that college teachers who have studied educational philosophy and psychology are more proficient teachers than those who have not" and the practices of trained educationists "do not seem appreciably different" from others.

Lovenstein writes in his postscript that his and other papers were not really understood by the conference participants and "those who read these papers and discussions when published will probably be even more at a disadvantage." Perhaps because of the apparent anti-intellectual "bias against educational philosophy and psychology" (and, according to Fels, lack of a scientific approach to teaching economics) some innovators have abandoned the appropriate goal of teaching economics—as a "unified and usable system of thought"—in favor of demonstrating the reasoning process on a selective and piecemeal basis or simply giving reassurance about the usefulness of economics. "With the help of educational philosophy and psychology," however, "economics is teachable as a subject and can be made exciting in and of itself."

What is the basic contribution of this book? Certainly it does not prescribe *the way* to teach elementary economics. Differences in course objectives, class size, nature of the institution, ability and interests of students, and size and particular talents of instructional staff all call for variation in course design (traditional subject areas, cases-concepts, problems-social goals), in teaching techniques (lecture, tutorial, discussion, workshop, independent study), and in evaluation methods. The significance of the book lies in the fact that: (1) such a book was published; (2) there is something new or something old-but-forgotten in the way of teaching techniques for virtually everyone who takes the time to read any part of the book; and (3) the book may, it is hoped, pioneer a whole series of high-quality books and journal articles seriously dedicated to the idea that something should and can be done to improve a condition in the crucial "principles" course (and in economic education generally) that has for too long bordered on the shameful.

ROBERT L. DARCY

Ohio University

Principles of a Growing Economy. By DANIEL HAMBERG. New York: W. W. Norton & Co., 1961. Pp. xviii, 879. \$6.95.

This book is one of the recent bumper crop of texts for use in teaching the first year of economics. Such proliferation makes scrutiny of distinctive features a necessity. Professor Hamberg states that he has tried to keep the non-essentials to a minimum, that he has undertaken the presentation of "basic economic principles" with emphasis upon "related problems of public policy." He has eschewed the use of such tools as the theory of consumer behavior, and the acceleration principle.

Despite such noble efforts of the author, the book, along with others of current vintage, runs over 800 pages. Economic textbook writers should heed the Shakespearean commentary on "brevity" lest they discourage students from pursuing the study any further than the "required course."

Hamberg has two briefer books to his credit, and numerous articles. His writing is clear and easy to read—certainly virtues for any text. The introductory section of the present book which contains a prologue on the study of economics and a discussion of the nature and development of U. S. economic institutions covers a scant 60-odd pages. Perspective is so essential to proper use of technical knowledge that, in the opinion of this reviewer, historical and philosophical background material should be given more emphasis. This could be accomplished by extending the presentation of such material into the appropriate sections of the text.

Part II (220 pages) is devoted to national income accounting and analysis. This material is most extensive. There is much mathematical, graphic and statistical analysis. The coverage will be appreciated by the more mature student, but there is some question of need for such extensive coverage for the younger student. This section begins with a discussion of accounting statements for the individual firm, and the author has attempted to use these statements as a basis for national income accounting. Writers of economics texts

seem to be unable to present the accounting statements with clarity and precision, and Hamberg is no exception. His experiment in the modification of the firm's income statement is not looked upon with approval by this reviewer. Economists would do well to utilize the readily available published reports of corporations in presenting such information.

Part III covers monetary and fiscal policies and the usual concepts of money and banking. Federal Reserve policy and fiscal policy for economic stability are covered with clarity. The final chapter of this section on an evaluation of the national debt is understandable.

Price and market structure are covered in Part IV where the analysis is based upon the relation between inputs and outputs viewed as the production function. There is extended discussion of concepts of elasticity and varied market conditions. Emphasis is placed upon the ideal of a free-enterprise economy, as well as upon an appraisal of economic efficiency. The concrete illustrations used in this section are very helpful in explaining market behavior. The concluding chapter of this part of the book on "Monopoly versus Competition: Size and Research" is interesting because Hamberg discusses innovation, research and development. He states that "large size per se is no guarantee of serious interest in research" (p. 694).

This section could be improved with some use of break-even analysis and some discussion of class markets and prices at such points as at page 532 ("larger quantities can be sold only at lower prices") in the discussion of the monopolistic competitor.

Part V, covering the distribution of income, includes the factor-income concept as well as personal-income distribution. Questions of social policy such as discrimination and its impact are brought up here. The final section, Part VI, is devoted to international trade. This subject is treated clearly, and without extensive commentary.

Each section has a brief introduction, and the chapters in each section conclude with helpful questions for review and discussion. Footnote references provide sources of information, but there is no attempt to establish bibliographies or suggested readings for the curious student. This, of course, is the teacher's job.

With an easy-to-read, almost conversational style, the book should maintain the interest of the student. However, we must recognize that no text in this field is adequate for all students and for all introductory courses. This text would be better for the student who takes economics as an upper-classman, and who has had some exposure to economic concepts. The younger student might need more background to use the text profitably.

Since the coverage of national income determination and resource allocation through the price mechanism is so extensive this text would be best suited for those courses in which it is the intent to place emphasis upon these two aspects of economics.

JANET K. MESSING

Hunter College of the City University of New York

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

The Economics of Defense in the Nuclear Age. By CHARLES J. HITCH AND ROLAND N. MCKEAN [with contributions by Stephen Enke, Alain Enthoven, Malcom W. Hoag, C. B. McGuire, and Albert Wohlstetter]. Cambridge: Harvard University Press, 1960. Pp. xii, 422. \$9.50.

Until now RAND economists' articles and papers have been so diversely published, mostly in noneconomic journals and other media, that few economists, other than RAND staff or consultants, have read an adequate sample. This book, unlike the previous nine, is drawn from the whole body of the group's economic research. It is still, of course, only an outcrop of the ore body. Five hundred or more man-years of economic research, mostly with classified data and responsibly focused upon solving the customer's particular problems, could hardly be fully represented in a single general circulation book, which is, in the main, the personal contribution of its two authors. For example, RAND's research on the Soviet Union and its massive quantitative research on costs and logistics are barely visible. Nevertheless, the publication of the current volume permits economists, conveniently for the first time, personally to apprehend and appraise the significance of RAND's contribution to economic art and science.

The book is in three parts, preceded by an introduction and followed by an appendix and bibliography. The introductory two chapters demonstrate that defense is significantly a problem in resource allocation; and that the revolution in weapon technology has radically altered the objectives to which such allocation should be bent. The objectives must be first, to deter a suicidal scale of thermo-nuclear war; and second, to be well prepared for fighting limited, local wars if, as is probable, these are precipitated by Communist adventurism. Economic strength of nations is militarily significant only as it affects cold-war international relations, deterrence, and limited-war forces in being. Massive and prolonged mobilization following war's outbreak is no longer relevant.

Part I, "The Resources Available for Defense," is a contribution of limited value for economists. Its content is macroeconomic principles, well presented and focused on national defense economic policy. Resource limitations are discussed for the contemporary national security context just characterized. GNP is defined and shown to be a general constraint. The determinants of GNP are identified. The GNP's of the major powers, at present and in the future, are compared. Problems of determining the allocation of GNP to military purposes, including consideration of the indirect effects of defense spending, are discussed. Present and future defense budgets of the major powers are compared and appraised for military significance. Part I thus applies conventional economic wisdom to the over-all defense budget decisions which Congress and the President make. It is very valuable for government officials, public policy leaders, and students. Because it is very well written and analytically and factually sound, it is also useful reading for professional economists.

Part II, "Efficiency in Using Defense Resources," and Part III, "Special Problems and Applications," comprise the body of the book. These chapters are devoted to micro and welfare economic principles, amplified for recent advances in theory and technique, and then applied to decision-making in the military establishment. Familiar economic principles at the abstract level are still here. But in this application consumer welfare and profit maximization to drive the machine, and competitive markets to govern it, are all absent, and so alternatives must be devised. Variables must be reconceived. "Outputs" become such things as defense kill potential and target destruction potential. "Inputs" become bombs, bombers, radar stations, and cargo planes. The decisions at issue concern *particular* inputs and outputs, for which, in ordinary economic analysis, one would normally reach for his partial equilibrium tools. But the usual parameters which make partial equilibrium analysis so useful are either absent or inconstant. In military decision-making, then, either a new type of centrally dictated general equilibrium must be conceived; or a set of principles for suboptimizing must be devised, to be the equivalent of partial equilibrium ones in private markets. The authors choose the latter. But, for their area of concern, this means that spill-overs (social costs and benefits outside the boundaries of the suboptimization) are a constant hazard. Contrary to usual market analysis, a suboptimization solution here must be presumed suspect, until it has been tested for spill-overs and these have been found to be innocuous.

Selection of the criterion—the objective and measurement from which preferred alternatives may be recognized—is frequently, therefore, the central problem in designing an analysis. As the authors show, the problem is not only that it is difficult to pick a correct, usable criterion. It is so much easier to pick a poor one—poor because it sets the wrong size of gain or cost; or neglects spill-overs; or is wrong conceptually, or in "prices," or in allocations among joint costs and joint products. An example of spill-over neglect is given by the authors (p. 169):

In [a] frequently cited example of successful analysis, alternative arrangements for washing and rinsing messkits were compared. As his test of preferredness, the analyst used the minimization of the number of man-hours required to do the job, given a total of four tubs. The optimal arrangement, according to this test, turned out to be the use of three tubs for washing and one tub for rinsing. A hypothetical reaction of the mess sergeant has been reported [by A. M. Mood] as follows:

Yeah, I remember that guy. He had some screwball idea that the mission of the Army was to eliminate waiting lines. Actually I had it all figured out that two was the right number of rinse tubs. With everyone rinsing in one tub the bacteria count would get way past the critical level. But we switched to one rinse tub while he was around because the old man says he's an important scientist or something and we got to humor him. Had damn near a third of the outfit out with the bellyache before we got the character off the reservation. Then we quick switched to three rinse tubs and really

made a nice line. "Nothing like a good line to get the men's legs in condition," the old man says.

The authors give more serious examples in Chapter 9.

The chapter on "Incommensurables, Uncertainty, and the Enemy," opens a line of original work, which adapts, amplifies, and extends economic theory and principles. Concerning uncertainties, "the most important advice is: Don't ignore them. Ignoring uncertainties, is a chronic disease of military planners and analysts. . . . To base an analysis and decision on some single set of best guesses could be disastrous." Following a brief discussion of game theory, the authors find: "Nevertheless, these concepts and rules borrowed from game theory must be applied to actual military problems with a good deal of discretion. War, especially of the modern nuclear variety, is not a two-person zero-sum game; that is a game in which only two players are involved, the gain of one being exactly equal to the loss of the other. And it is only in such a two-person zero-sum game that even a very intelligent enemy can reasonably be expected to choose the course that is worst for us." Further, no enemy is "completely rational, perfectly intelligent, can read minds, never make mistakes," and this accentuates the conservative bias in game solutions. Therefore, "the most important part of the answer to the pervasive uncertainty facing the analyst or the military planner is not greater subtlety in making difficult choices, but the *design of systems to cope with more of the critical contingencies*, [and] to improve upon the present poor set of alternatives" (italics in original; quotes from pp. 193, 196, 198, 199).

The authors' principles of uncertainty are then extended in subsequent chapters. Can anything be done to "buy" technological progress beyond merely increasing outlays on research and development? The question is important. In the national economy, technological progress has been more significant than increase in factor inputs in improving quantity and quality of output. In military affairs, "Both weapons and systems for delivering them have gone through several revolutions in the few years since the end of World War II" (p. 243). The authors find that research and development should be conducted in discrete, sequential stages. More effort and less programming in early exploration stages buy information and reduce uncertainty, so as to permit rational decisions in the more expensive final development and procurement. Competition and "duplications" in early research and prototype efforts—where uncertainty and unpredictability are great—also spur inventive genius, and thereby open new alternatives. Expert predictions of the results of research and development efforts have been notoriously unreliable. Therefore, final development and procurement efforts based on prematurely detailed programming have been inefficient, and the errors have been expensive ones. The greater the uncertainty, the more necessary is "wasteful" competition and duplication of brain-type research, in order to reduce ignorance. The authors' concepts are at variance with recent research and development principles and practice, which have implicitly conceived the economic problem as one of static model optimization. Rather, say the authors, the search for parameters and optimization based on

assumptions that they will change rapidly must be the core of economically efficient solutions. The RAND principles have significance for institutional organization and administration, as well as for explicit decisions. Among other things, they argue for less centralization in decision-making. The authors quote C. E. K. Mees:

The best person to decide what research work shall be done is the man who is doing the research. The next best is the head of the department. After that you leave the field of best persons and meet increasingly worse groups. The first of these is the research director, who is probably wrong more than half the time. Then comes a committee, which is wrong most of the time. Finally, there is a committee of company vice-presidents which is wrong all the time.

"In industry and especially in universities, there are strong centrifugal forces to match the centripetal ones." This is, unfortunately, far less true in government where the center of gravity of decision-making tends to shift to higher echelons. "New higher echelons, in fact, get invented from time to time to facilitate this movement." (Quotes from pp. 254 and 255.)

I have said enough, I think, to indicate that this is a book which extends and reconceives basic economic concepts and their relevance to situations in which the usual assumptions concerning markets and the play of competitive forces, known and invariant technological and institutional parameters, individual person utility, etc., are inappropriate. This tack continues, sometimes with considerable force, through the remaining chapters. A long, linear programming solution is developed by C. B. McQuire for choosing among present and future cargo aircraft for routine resupply operations and for Air Force deployment in the event of peripheral war in the Pacific. Stephen Enke, former head of the RAND logistics group, formulates a general logistics framework. He then subjects air-base production, parts supply requisitioning cycle, and procurement alternatives to economic analysis. Malcolm W. Hoag has written a subtle chapter on the "Economics of Military Alliance"; the authors have chapters on "Institutions to Promote Efficiency," "Economic Warfare and Disarmament," and "Mobilization, Civil Defense, and Recuperation"; and Albert Wohlstetter has a chapter on "Choosing Policies for Deterrence." The book closes with Alain C. Enthoven's appendix, "The Simple Mathematics of Maximization."

It is apparent that, in significant degree, this is an advanced "principles" book. The body of basic macro- and microeconomic theory here formulated and presented for the context of economic solutions of national defense problems, is rather full except for the obvious exclusion of distribution theory. Theory is applied both illustratively and practically to contemporary affairs. It is also clothed and supplemented with adaptations of recent advances in theory and technique. The authors have been concerned with identifying difficulties in applying theory as well as with formulating it rigorously; there is a welcome undercurrent of wisdom. The difficulty of characterizing it as a principles book is that this might suggest a body of well-known doctrine, whereas, on the contrary, RAND's original contributions are capsulized here.

It is, perhaps, useful also (1) to note that this is one of the few books in which economic principles, in a natural and convincing way, provide explicit framing for operations research; (2) to re-emphasize that the book is an extended attempt to apply economic principles to nonmarket sectors; and (3) to observe that some of the chapters are significant contributions in interdisciplinary research.

There is thus a great deal that is new, interesting, and educational here for economists. I have only two comments which might be termed critical. First, in the absence of a cheap students' edition, the book is unbecomingly high-priced, given its academic importance and wide interest, and issuance by a public service organization. I think RAND and the Harvard Press chose the wrong criterion for their price decision.

Second, the book has an important omission relative to its title. The authors' time horizon does not extend beyond 10 years or so. This is implicit in their view of deterrence. They cast suicidal, thermo-nuclear missile war only as a two-person game between the Soviet Union and the United States. Of course, this is an immediate problem. But if ten years or so will see a dozen or so nations with missiles and thermo-nuclear warheads, then the game will become a many-person one. If the present "balance of terror" in a two-person game is "delicate," what is the adjective for a many-person one? How important is it to prevent the multiplication of the number of independent thermo-nuclear missile powers? If important, what are the alternative pathways? If, as some believe, one important alternative involves centralization of thermo-nuclear weapons in a powerful world police force and abolition of national thermo-nuclear forces, then the urgency of moves in this direction may be very great. What are the odds that this or any other alternative can be achieved in time to forestall the new game of many-person nuclear forces? Is there any merit in the thought that an organization and talent which have performed so brilliantly for the defense establishment, might, for a nonmilitary sponsor, give attention to policies for deterring the fearful prospect of the 1970's?

HAROLD J. BARNETT

Wayne State University

Linear Programming and the Theory of the Firm. By KENNETH E. BOULDING AND W. ALLEN SPIVEY. New York: The Macmillan Company, 1960. Pp. ix, 227. \$6.00.

This collection of essays is the outgrowth of one of the seminars sponsored by the Ford Foundation for college teachers of economics in smaller colleges. The seven essays included in this volume are only loosely connected with each other. They vary considerably in quality and cannot, with justice, be reviewed as a whole. The following discussion preserves the order in which the essays are presented in the book.

The essay by Kenneth Boulding ("The Present Position of the Theory of the Firm") can be divided into two parts. The first part presents a brief history of the older theory of the firm; the second gives brief introductions to the sub-

ject matter and techniques of linear programming, game theory, and organization theory. These subjects really require a much longer treatment than can be given them in a short essay. Nonetheless, the essay is very good and deserves reading by anyone interested in capsule summaries of the subjects.

The first part of the essay suffers somewhat from two omissions, perhaps excusable in so short a treatment. First, no discussion is given of what is expected from a theory of the firm. The examination of criticisms of marginalism contained in this part of the essay would have been improved had Boulding commented on this methodological point. Second, the essay implicitly assumes that what we call the theory of the firm is really intended to explain how a firm works. This reviewer would have enjoyed Boulding's comments on the claims of many economists that this theory is meant to be a theory of value and allocation which is no more intended to deal with the inner operations of a firm than it is to psychoanalyze the mind of a utility maximizer. According to this view, the theory can be criticized for not explaining value but cannot be criticized for not analyzing the firm *per se*.

The second part of Boulding's essay is a commendable attempt to provide some insight into the differences and similarities between the older theory of the firm and the newer developments now taking place. The differences emphasized are the degree of information required to deal with the maximization problem, the incorporation of uncertainty into the analysis, and a recognition that the behavior of persons as parts of organizations may differ from their behavior as "unattached" individuals. The general conclusion is that these new developments, irrespective of these differences, should be viewed as extensions rather than as revolutions in the older theory of the firm.

The essays by Allen Spivey ("Basic Mathematical Concepts" and "An Introduction to Linear Programming") are as succinct treatments of their subjects as are to be found. My only regret is that they were not published sooner. I know of no elementary treatment of these subjects that requires as little background and yet goes so far within so few pages. The essays move successively from the rudiments of set theory and linear algebra to the application of both to linear programming problems, all within the space of 76 pages. Yet, all should be very comprehensible to the untrained, mature reader.

The essay by Y. Wu and C. Kwang ("An Analytical and Graphical Comparison of Marginal Analysis and Mathematical Programming in the Theory of the Firm") is a quality product which certainly justifies a reading by anyone interested in a series of derivations of step-function marginal cost curves with linear programming techniques. However, the essay seems somewhat long (64 pages) and repetitive with too little comparing of economic implications.

The remaining three essays ("Operations Research: Its Nature and Scope," by H. H. Jenny; "Multiple Goals in the Theory of the Firm," by C. M. White; "A Short Essay on a Managerial Theory of the Firm," by S. Cleland) generally are of poorer quality than those already mentioned. The essay by Jenny is at its best when it is purely descriptive. Unfortunately, the description of the nature of operations research is accompanied by an evaluation of and comparison with the older theory. These sections contain many unsubstantiated

assertions and not infrequently take a doctrinaire attitude toward the relative merits of the new and old theories. White's essay gives a comprehensive list of alternative and multiple goals for a firm but gives no clues as to what evidence prompted his preference for some over others or what evidence one should look for to test for the presence of these goals. The author also confuses economic inefficiency with technological inefficiency. The main point of Cleland's essay is that the new theory of the firm ought to allow for more decision-making by management. All three essays seem to reveal a lack of familiarity with the general requirements and objectives of a meaningful theory.

HAROLD DEMSETZ

University of California, Los Angeles

Economic Theory and Operations Analysis. By WILLIAM J. BAUMOL. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. x, 438. \$6.75.

The structure of this book is puzzling but it contains admirably lucid statements of many topics in the newer as well as the more traditional areas of microeconomics. The author's avowed intention is "... to offer the reader both a systematic exposition of received microeconomic analysis and an intuitive grasp of the many recent developments in mathematical economics. . . ." It may be stated fairly that the author has achieved this goal.

The book is like a sandwich with the traditional theory placed between expository essays on the themes of recent mathematical literature. Those looking for a good text on standard theory of the firm, theory of the consumer, general equilibrium theory, welfare economics and distribution theory at the upper intermediate level will find it in this book in Part II. This Part embracing 162 pages and seven chapters is almost a self-contained text on this field of analysis. What is required to make this Part self-contained is an introductory chapter and more material on the role of relative prices in the functioning of the economy. Not all of the material is traditional; there is, for example a discussion of the hypothesis that firms seek to maximize sales subject to earning profits of a given amount and a discussion of the demand for money from the viewpoint of the theory of inventories to both of which topics the author has made technical contributions in other writings. The only macroeconomics in the book, a brief statement of the Kaldor theory of distribution of income, also appears in this Part. The treatment is uniformly competent though the statement appearing on page 188 and again on page 189 that the long-run average cost curve consists of the lowest segments of the short-run average cost curves is obviously wrong as we have known since Viner argued publicly with his draftsman and as the author himself indicates at other points in his discussion.

This exposition of microeconomic theory is preceded by a miscellany in Part I headed "analytic tools of optimization." Here we have an explanation of the concept of optimization, a lesson on some elementary mathematics including the notions of function and logarithm, the arithmetic, geometry and some of the economics of marginal analysis, a lesson on the calculus and its application to problems of maximizing and minimizing and finally, three chap-

ters on programming—linear, nonlinear and integer. (Integer programming is another topic to which the author has elsewhere recently made important contributions.)

The third Part of the book is essentially another collection of essays grouped under the heading "recent developments in mathematical economics." The topics discussed are input-output analysis, activity analysis, Neumann-Morgenstern cardinal utility, game theory and decision theory.

The reason for including the fourth Part entitled "Application to Marketing and Operations Research" is not at all clear. It consists of a chapter concerned with the question "is there a place for marketing theory?," a chapter on marketing and operations research which is a collection of miscellaneous illustrations of problems in operations research, and finally a very thin chapter on electronic computers. It is perhaps surprising in a book concerned with problems of the firm and decision-making under uncertainty that there is no discussion of the theory of capital budgeting.

With this structure, the book affords the reader some rather startling contrasts. After struggling with the difficult though well-explained material on the very new topic of integer programming in Chapter 7 he finds he is able to wheel freely through a very elementary exposition of common properties of demand curves in the first four sections of the next chapter. After being carried to the outermost frontiers of the theory of decision-making under uncertainty in Chapter 19 the reader is confronted (quite unexpectedly) with an unimaginative discussion of the meaning of theory and the possibilities of a theory of marketing. The author announces (p. 5) that the theory of optimal decision-making will constitute a central theme of this book. The theme does run through the book. Most of the topics are related to it but the book is not obviously built around this theme nor does the book arrive at a climax or conclusion in respect of this theme. Indeed the last sentences of the book are concerned with "how electric circuits can do arithmetic."

The book is not to be condemned for its puzzling structure. It is a particularly good sandwich, and although the author probably did not intend that his readers would separate the sandwich and consume only the parts their condition demands, the likelihood is that the book will be treated this way. The profession is accustomed to expect from Professor Baumol elegant expositions of difficult and new subjects. The profession will find such expositions here. There is no better brief statement of welfare economics to be found. The presentation of the various aspects of programming theory is masterful and the discussion of game theory and decision theory succinct and clear. A great many of us will turn often to one or other of these pithy summary statements.

WM. C. HOOD

University of Toronto

Production of Commodities by Means of Commodities: Prelude to a Critique of Economic Theory. By PIERO SRAFFA. New York: Cambridge University Press, 1960. Pp. xii, 99. \$2.50.

This is a terse book. In its lucid prose, there is little pity for the hapless reader who may fail to grasp the implications of an argument; or worse, fail

to see where the author is going. The main purpose is to show how one can construct a standard of value which is independent of the vagaries of demand and, ultimately, of tastes. If the result were successful, the theory of relative prices and of distribution could, of course, be drastically simplified.

In the very first paragraph of the preface, the author warns us that he is not assuming constant returns in all industries, but that if the reader finds it helpful to make such an assumption it will do no harm. For the next few paragraphs, I shall avail myself of this kind offer, but later do without it.

Briefly, the argument of the book may be summarized as follows: Consider an economy in which *all* industries operate with supply curves of infinite elasticity—no variations in physical returns to scale, no factors scarce to the industry. At first, suppose each industry to produce but one commodity with no joint products. Divide commodities into two classes, basic and nonbasic. Basic commodities are those which enter into the production of all commodities (including themselves) either directly, or as means of production of other commodities—perhaps at several removes. Nonbasics are all other commodities. Sraffa (pp. 7-8) exemplifies nonbasics as luxury goods, but this is not logically necessary and may even be misleading. Every system must have at least one basic product, but no restriction is placed on the number of nonbasics. Only those industries are included in the system that yield a surplus over cost; i.e., only those whose product sells at a price at least equal to average cost including profit. Finally, assume that all industries must yield the same rate of profit; the rate of profit is defined as value of output less value of inputs divided by value of output.

Consider first a case where there are only basic products; i.e., a case in which labor is a produced means of production, as in a slave society. Let there be k products, each produced by a process utilizing, directly or indirectly, all k products as inputs. Representing the amount of the i^{th} product used in industry A by A_i and its price by p_i , the system may be represented by the following set of equations:

$$\begin{aligned} (A_a p_a + \dots + K_a p_k) (1 + r) &= A p_a \\ (1) \quad \dots &= \dots \\ (A_k p_a + \dots + K_k p_k) (1 + r) &= K p_k, \end{aligned}$$

where $A \geq A_a + \dots + A_k$, etc. Put $p_i = 1$, and we are left with k equations to determine $k - 1$ prices and r , the rate of profit. In this system, the value of output can be measured in terms of any one commodity, or linear combination of commodities, where the weight of each commodity is its fraction of the national income. All prices are independent of relative quantities.

In this model, all net income is profits; "wages" simply purchase the means of subsistence. Now let us drop the assumption that labor is a produced commodity, and treat "wage-goods" as final consumption. This implies that wage-goods will become nonbasic, save for the fluke case where a consumer good functions also as a means of production. The basic part of the system can now be written as:

$$\begin{array}{rcl}
 (A_a p_a + \dots + M_a p_m) (1 + r) + L_a w & = & A p_a \\
 \dots & = & \dots \\
 (A_m p_a + \dots + M_m p_m) (1 + r) + L_m w & = & M p_m
 \end{array}
 \tag{1a}$$

where $m < k$, $M < K$, L_i is the amount of labor used in producing the i^{th} basic product and w is the wage rate, assumed to be the same in all industries. (Different grades of labor are assumed to be simple multiples of "common labor" and to be paid proportionately higher wages, so that the total labor employed in an industry may be expressed in a common unit receiving a uniform wage.) (1a) is indeterminate: moving from (1) to (1a) loses $k-m$ goods¹ and $k-m$ equations because $k-m$ goods become nonbasic (consumption) goods, and hence are excluded by definition from (1a); but we are given a new variable, w , to determine and no new equation to determine it. The system has one degree of freedom; w may vary from zero to the whole of the net product with profits varying inversely.²

Obviously as w varies the relative prices of different commodities will vary with the ratio of labor to (other) means of production used in producing them. This ratio cannot be ascertained, for any one commodity, by looking at its production in isolation from the rest of the system. For example, from the i^{th} equation alone it might seem—given w —that I is a very labor-intensive commodity, but when one considers the amounts of labor used in producing the amounts of $A, B \dots M$ at the second, third, fourth, etc. "stages of production" which in turn are instruments for producing I , it might be necessary to revise one's initial judgment. However in any system of m independent linear equations such as (1a) commodities can be ranked in terms of the flexibility³ of their own prices with respect to w ; when w declines some commodity prices will fall proportionately more than w and some less, and conversely when w rises. Somewhere in the middle of these ranks we may imagine an industry whose input components are such that the flexibility of its price is unity. Such a commodity has certain important advantages as a measure of value, as we shall see.

As Sraffa admits (p. 18) it is unlikely that any actual commodity could be found that would have the necessary characteristics. However, he gives us directions for constructing such a commodity as a weighted average of actual commodities. This commodity is called the "Standard Commodity" (p. 20), and its formula requires that it must include all basic commodities (and only basic commodities) in such proportions that, for each commodity, the ratio of output quantity to input quantity is equal to that for any other commodity; this is called the "Standard Ratio" (p. 21). In terms of (1a), this means:

¹ Ignoring the possibility that some wage goods might also be basic, and specifically assuming that at least one such good is not—i.e., $k > m$.

² Sraffa writes the relationship (p. 22) between wages and profits as $r = R(1 - w)$, where R is the ratio of net product to the means of production, w is the wage share in net product, and r is the rate of profits.

³ Flexibility here refers to the percentage change in the long-run equilibrium price—that value of (say) p_i that will satisfy (1a)—divided by the percentage change in w . Sraffa does not speak of this flexibility, but uses an original terminology (see especially Chapter 3).

$$(1b) \frac{A}{A_a + \dots + A_m} = \dots = \frac{M}{M_a + \dots + M_m} = 1 + r =$$

Standard Ratio.

If this condition were not satisfied, then the own-rate of return of some commodities would be greater than of others which would violate the condition that the rate of profits be the same in every industry. Comparing (1a) and (1b), it is clear that both can hold only if w is zero. Therefore, Sraffa constructs the standard commodity on the assumption that w is zero.

This is not as arbitrary as it sounds. To see the rationale of his procedure let us consider his view of the productive process. He envisions a "cycle" of production beginning with a stock of commodities which is used up in the productive process from which emerges its replacement,⁴ and (possibly) a surplus, depending upon the productivity of the system.⁵ (If the stock of commodities includes durable instruments there are complications, but no difficulties of principle.) The amount of the surplus per period depends solely upon the technological characteristics of the system and not upon how it is divided between the two shares, wages and profits. Sraffa offers no theory of distribution; so far as this book is concerned, the wage share may be represented by any real number between zero and one, and the profit share by one minus the wage share. But since there is no functional relation between rewards and supplies of what I would call factor inputs, the *physical* composition of the surplus is independent of the ratio of wages to profits.

However, its *value* composition in units of any one commodity or of a weighted average of commodities will vary with the ratio of wages to profits, unless wages are zero. To assume wages are zero does not alter the physical composition of the surplus, and therefore the measure of the national income in standard commodity units will not vary with changes in the ratio of wages to profits. The composition of the standard commodity and of the national income both depend upon the state of productive technique [i.e., upon the set of input-output coefficients in (1)], but if the standard commodity is to provide a unique measure of value there must be a one-to-one correspondence between the state of technique and the standard unit. On the assumption that all prices are positive and that the rate of profit is equal in all processes, Sraffa demonstrates, in Chapter 5, that this correspondence exists. The logical structure of this part of the argument is exceptionally tight, even for this volume, and further condensation would make for obscurity. Suffice it to say, I find the argument valid in its essentials.

Now let us consider the meaning and/or uses of the standard commodity. In any state of technology, there will be a subset of all commodities (the basic commodities) from which, when the economy is in equilibrium,⁶ one can construct a (weighted) composite whose rate of exchange with any given com-

⁴ This explains the title of the book.

⁵ As Sraffa notes in Appendix D (p. 93), this view of the productive process is essentially Ricardian.

⁶ That is, when prices and quantities are in accord with (1a) and do not reflect the influence of disturbances.

modity will be invariant with respect to changes in the ratio of wages to the rate of profit. Since the price of any product can be imputed, without remainder, to wages and profits (by definition), this means that the rate of exchange of the standard commodity, E , with any other commodity will not be affected by the relative prices of the nonstandard commodities. E can vary only when a change of productive techniques causes an alteration in the physical structure of the standard commodity. That is, relative prices, in terms of standard units, depend only on the technical conditions of producing the standard commodity.

From this it follows that if one can find even one commodity which can be treated as identical at two different times, or in two different places, he can, in principle, establish an equivalence between the appropriate standard commodities—by expressing them in terms of this one commodity—and thereby make it possible to compare commodity bundles in the two situations. For example, if the common commodity should be man-hours of unskilled labor,⁷ then we may express the national income of China in 1960 as so many U. S. standards units of 1960 or as so many Chinese standard units of 1900, etc. Because of the uniqueness of the standard system, we need not fear that our results will vary with the commodity chosen as the measure of value—should more than one be available. Moreover, this measure of value *seems* to have nothing to do with tastes or preferences, but to depend solely on technology. The crucial point is whether one can identify a man-hour of labor, or any other commodity, as being identical in two different situations. This is not a matter with which Sraffa is here concerned; however, in the critique to which the present essay is the prelude, he will need to be.

Now, let us consider the nonbasic commodities. These are goods which, by definition, do not serve as means of production of every commodity.⁸ Nonbasics cannot, by definition, appear in a system of simple reproduction;⁹ i.e., one in which $J_a + \dots + J_k = J$, $J = 1, 2 \dots k$. But in a system where

⁷ Sraffa does not develop this aspect of his argument. I suspect he has something of this sort in mind from his remark on page 32 that "all the properties of 'an invariable standard of value' . . . are found in a variable quantity of labour. . . ."

⁸ This definition applies only to systems in which only one commodity corresponds to any one process—no joint production. In Chapter 8 a more general definition is introduced (p. 51). This definition says (in effect) that in a system of production processes such as (1a), there can be no more basic commodities than there are (linearly) independent equations: the other commodities are nonbasic. Thus, in (1a), if only h equations were independent, $k - h$ commodities would be nonbasic; the nonbasic commodities would be those produced by the processes whose equations were redundant. It can easily be seen that this more general definition implies the earlier one. Increased generality of definition is required to cover cases where a basic commodity, on the original definition, uses a nonbasic commodity as a means of production (and to cover cases of joint production). In this case, the apparently basic commodity is actually nonbasic.

⁹ I.e., a system of simple reproduction requires that the quantity of each commodity that is produced should exactly equal the amount used up. If this condition is satisfied for every basic, then either the nonbasic requires no basics as means of production (which contradicts the definition of a basic) or uses up some of at least one basic which contradicts the definition of simple reproduction.

a surplus is produced [i.e., $J(1 + \lambda) = J_a + \dots + J_k$, $\lambda \geq 0$ for all J , and $\lambda > 0$ for at least one J], nonbasics *may* arise, though they need not. Sraffa's example of a nonbasic commodity is a luxury good. Since, given the rate of profits, the basic system is determinate, the prices of all means of production of the nonbasics (including the wage rate) are determined. Changes in the cost elements of a nonbasic may affect its price, but changes in its own price due to improvements in the technique of producing it will not affect the price of any *basic* commodity, given the basic system. (However, there may be cost-price inter-relations among sets of nonbasic commodities.) In this sense, the prices of nonbasics are cost-determined, but not cost-determining. Despite this, there is nothing postulated about the relative importance of basics and nonbasics in the national income. In principle, the basics could constitute no part of *net* output or national income¹⁰ and yet their prices would determine all other prices in the system, but would not be (reciprocally) affected by them.

This all adds up to a theory of price determination without demand functions. Is it satisfactory? I think not, for two reasons. The first of these refers to the question of whether a particular commodity will be produced *at all*. Sraffa postulates that the price of a commodity must equal its cost of production plus a mark-up determined by the rate of profit (call it the supply price). But there is no guarantee that demand will be such that a positive quantity could be sold at a price high enough to equal the supply price. Consequently, in the case of nonbasics, changes in tastes could cause the demise of one commodity, A , and its replacement by another, B , provided only that a shift in tastes lowered the demand price for one unit of A from above to below the supply price, and conversely for B . This would not affect the basic system, though it might drastically alter the physical composition of national income.

However, there is a related difficulty for basic commodities. The prices of these commodities, by definition, depend solely on technical conditions; consequently, variations in tastes cannot *directly* affect them. But consider the possibility that one or more basics could be produced by more than one method. Then, the relative cost advantage of the alternative methods would depend upon the relation of wages to profits. But in terms of what standard commodity are we to measure the relative costs of the different methods? Each method implies a different standard commodity, and hence relative exchange values will vary with the ratio of wages to profits because of the induced change in the standard commodity.

Sraffa confronts this difficulty in Chapter 12, and attempts to overcome it by assuming (pp. 82-83) that although the products resulting from (say) two alternative methods are identical for basic uses, these products are different for nonbasic uses, which implies that the two methods will both be actually utilized irrespective of the wage-profit ratio. Hence comparison of the relative cost of the two methods can be made in both standard systems. And

¹⁰ I.e., the entire net output or surplus could consist of nonbasics. I am indebted to W. Haque for correcting my ideas on this point.

Sraffa then shows that while the ratio of the relative costs of the two methods will vary with the standard unit used, their ranking in terms of cost will not.

This is acceptable if we grant that there are nonbasics such that both methods of production are used simultaneously. But suppose this condition is not satisfied? Or suppose the different nonbasic uses are to some extent alternatives depending upon relative prices (see above), or that tastes for nonbasics depend upon methods of production, as Marxists would have it? In any of these eventualities, it becomes impossible to define a measure of value that is invariant with respect to the wage-profit ratio or even of the state of nonbasic users' (consumers') tastes. In short, Sraffa's model will work if the list of nonbasic commodities actually produced is fixed and if all possible productive techniques are always used. Otherwise, changes in consumer tastes may make it impossible to discuss the effect of a change in the wage-profit ratio on relative commodity prices in terms of a given standard unit.

A second difficulty with Sraffa's analysis arises from the absence of specification of decision-making units. We are told that the rate of profit must be equal on all processes; but there is not a trace of an argument as to why. Nor is any attempt made to show that any set of producing units would decide to produce a set of outputs consistent with a uniform rate of profit and a specific state of technology.

As noted at the outset, Sraffa explicitly denies that he is assuming constant returns to scale. At first blush this seems utterly inconsistent with the scalar expansions and contractions of processes required to construct the standard commodity. However, it is not necessary that these operations be carried out; it is necessary only that they can be defined so that for any given state of productive technique there will be one and only one standard commodity. If there should be increasing or decreasing returns to scale, this would mean only that the state of technique—as defined by process equations (1)—varies with the level of output. Whether it does so is irrelevant to Sraffa's argument, which is concerned only with explaining the consequences of technical change (i.e., of changes in input coefficients per unit of output), but not its "causes."

But if one particular commodity should be produced under conditions of increasing physical returns to scale, and some others are not, then for the rate of profit to be equal in all lines implies that the producer in the increasing returns industry does not maximize profit. This may be; but to assume equal rates of profit without specifying anything about the technical conditions of production and/or competition raises serious questions concerning the institutional assumptions necessary to insure that a set of outputs satisfying a given set of input-output relations would be produced.

One further point worthy of special notice is Sraffa's rejection of the notion of original factors of production (p. 94). This view is not only like that of Marx (which Sraffa recognizes), but also like that of von Neumann.²¹ As already noted, Sraffa views the economy as being endowed with a stock of commodities and a set of techniques which uniquely determine the maximum

²¹ J. von Neumann, "A Model of General Economic Equilibrium," *Rev. Econ. Stud.*, Aug. 1945, pp. 1-9.

rate at which that stock of commodities can grow. If we ask from where does the physical substance of these commodities come—i.e., what about land—the answer is that land is a nonbasic (Ch. 11). It is nonbasic because, though a means of production, it is not itself produced; i.e., it is nonbasic because it cannot help to reproduce itself, and therefore cannot enter into the standard commodity. The price of land is therefore determined by the standard system, but cannot enter into the determination of the set of prices which define the standard commodity. However, given the set of techniques available to the community, the price of (homogenous) land will vary with the quantity available (p. 76). This implies that a productive process which is “unprofitable” at the land price corresponding to one quantity (of land) may become profitable at the land price corresponding to a larger quantity. If this process produces a basic commodity, then the standard commodity is changed; in other words, the composition of the standard commodity depends not only on the state of productive techniques available to the community but also upon the quantity of land available.¹²

But if this applies to land then, as J. B. Clark asked long ago, why not to labor? If it does apply, then the standard commodity and relative prices vary with the relative quantities of (at least) two “original factors” of production—a view that smacks rather strongly of neoclassicism. If it does not apply, it is up to the author to tell us why.

These critical remarks are not intended to minimize a very significant intellectual achievement. As the author tells us in his preface, the central propositions of the essay had taken shape in the late 1920's. Had this book been published then or at any time in the 1930's, it would have constituted a theoretical innovation of the first importance. But von Neumann's essay (*op. cit.*) and the subsequent development of activity analysis have anticipated a good part of what Sraffa has to tell us. Even so, I suspect there is much that is new; but to be sure of this a reviewer would have to be far more *au courant* of the burgeoning literature of activity analysis than the present one. Sraffa himself makes no attempt to relate his own work to this literature; his “References to the Literature” (Appendix D) mention no one more recent than Marx. One can only hope he will attend to this deficiency in the critique to which this is the prelude.

M. W. REDER

Stanford University

Wage Behavior in the Postwar World, An Empirical Analysis. By WILLIAM G. BOWEN. Princeton: Industrial Relations Section, Princeton University, 1960. Pp. xiii, 137. \$3.00.

This is an extension of the author's earlier attempts to comprehend the conditions for attainment of stable-price and full-employment goals. In his book on *The Wage-Price Issue—A Theoretical Analysis* (Princeton, 1960), which was reviewed by Paul L. Kleinsorge in the September 1960 issue of this *Re-*

¹² Sraffa recognizes this in n. 1, p. 76.

view, Professor Bowen concluded that theoretical analysis cannot provide a clear answer to the question of whether "the wage- and price-setting institutions of the contemporary American economy impart an upward bias to the price level."

The slim volume here under review reports on empirical inquiry into wage-rate changes as related to the variables of unemployment, union strength, industrial concentration, profit rates and change in production worker employment. The relationship between unemployment and wage change is examined for the years 1900 to 1958, but the other variables referred to are considered only with reference to the postwar period.

The author finds that over the long period, "on the average, wages have risen faster than the long-term trend in output per man-hour whenever non-farm unemployment has been less than 9%," and "that wages have risen at about 5%/annum when unemployment has been held down to 3-4%" (p. 18). He lends support to the idea that there is at least some trend toward higher rates of wage increase at stated levels of unemployment. While the author is cautious about drawing conclusions on this matter this reviewer questions whether he has been cautious enough. The long-run comparison depends upon the accuracy of the unemployment estimates for the prewar years; nowhere is the reader alerted to the speculative nature of the Lebergott estimates, particularly for the pre-1929 years, which are selected as crucial. Similarly, no mention is made of the shift over to a new unemployment series or to labor force flexibility in the post-Korean period, although much is made of the response of wages to the Korean war (p. 44).

The author seeks for explanation of postwar variations in the unemployment-wage relationship by examination of changes over time and of inter-industry differences. He finds that broad trends in profits and in manufacturing employment do not help to explain these variations (p. 47); however, he concludes that the possibility that the length of collective bargaining agreements and the relatively rapid rise in consumer prices explain the 1958 recession picture "cannot be contradicted by available evidence" (p. 51). The inter-industry analysis yields several interesting conclusions, among which are the following: The degree of unionization is not an important determinant of wage change in recession but is important in recovery. Quite the contrary is found to be the case when a high degree of unionization is linked to industrial concentration; that is, wages rise relatively fast in recession but slowly in recovery. The author states that he has failed to "unearth any reasonably strong and consistent relationships between wage behavior and any single wage-determining factor" (p. 95). He can see no reason for expecting that in the future wages will go up less rapidly (at given levels of unemployment) than they have in the past. Neither does he see any easy way to achieve such a change; "even the wholesale elimination of trade unionism and industrial concentration would not solve the wage behavior aspect of the inflation-unemployment problem."

In this monograph Bowen has made an interesting contribution to the current discussion of a topic of prime importance. The appendixes contain in-

formation that will be useful to other analysts. The writing is lucid and well summarized, and despite a somewhat fragmentary character, it will have appeal for the general reader as well as the specialist.

ROBERT J. LAMPMAN

University of Wisconsin

Planning Production, Inventories, and Work Force. By CHARLES C. HOLT, FRANCO MODIGLIANI, JOHN F. MUTH, HERBERT A. SIMON, with contributions by CHARLES P. BONINI, PETER R. WINTERS. Englewood Cliffs, N.J.: Prentice-Hall, 1960. Pp. xii, 419. \$7.50.

For the past decade, macro-economists have been paying increasing attention to indices such as the Department of Commerce's statistics on manufacturers' inventories, the reason being that fluctuations in inventories are now recognized as important in determining movements in the economic activity of the United States. A parallel development of significance among micro-economists has been the derivation of mathematical models which recommend, in part, the dampening of costly production and inventory fluctuations within a firm. This book represents a major contribution to the micro-theory literature.

It is fair to say that there now exist distinguishable schools of thought on the economic solution of inventory problems. For evidence, we can point to academic centers of inventory research such as M.I.T., where emphasis is placed on queueing theory analogies; Case Institute of Technology, lot-size formulas; Stanford University, multiperiod two-bin models; as well as Carnegie Institute of Technology, where the research being reviewed was undertaken. Despite the differences in approach, the different schools of thought generally address themselves to the same classes of problems: How much inventory of each stocked item should a firm keep at various locations in order best to meet an economic objective? How should production and workforce levels be scheduled to ensure an economic optimum? The schools of thought can be differentiated on such matters as mathematical rigor and sophistication; applications to real problems; selection of an objective function, and types of inventory rules.

With the above discussion as background, we turn to the specific contents of this book. The authors concentrate on three broad subject categories: (1) production and workforce planning in the firm from an aggregate point of view (Chs. 2-6); (2) item-by-item inventory and production rules (Chs. 10-13; 16-17; 20), and (3) related mathematical and statistical derivations (Chs. 7-9; 14, 15, 18, 19). Throughout, there is an emphasis on multiperiod analysis, usually involving random fluctuations in item demands.

The important policy variables for the first category of problems is workforce size, production rate, and the implied size of inventory. Decisions are to be made in the context of aggregates, such as total labor force and dollar value of monthly production (and inventories). The authors refer to their mathematical technique as a "linear decision rule." The label stems from the fact that the economic optimality criterion is in terms of total costs, expressed

as quadratic functions of the decision variables and forecasted sales requirements; upon applying the differential calculus in a somewhat sophisticated manner to these quadratic relations, the authors derive decision rules which are linear functions of the essential variables and forecasts. The authors take great pains to explain their procedures for readers with varying points of view, viz., for nontechnically oriented managers who want to understand the aim and outcome of the analysis; for engineering-trained management scientists, who want the techniques given in sufficient detail to facilitate application, and for mathematically trained optimizers who want to study the theoretical underpinnings of the decision rules. In conjunction, the authors give an ample number of illustrations, presumably stemming from actual case studies.

In the second category of models, the authors study the decision variables of when and how much to reorder of an individual item. They proceed beyond the standard single-item and single-location type of model to make an attack on multi-item and multiwarehouse situations. The novelty of these models is the coupling of usual item-by-item analysis with the restrictions provided by the aggregate rules derived in the first category of models.

The third category is mostly concerned with techniques of forecasting sales requirements. Here again the approach is from the several points of view mentioned above.

By way of critical remarks, we mention the following: The strength of the volume leads also to a weakness. The presence of four major authors has made the coverage extensive but at the same time it has produced an unevenness in presentation. We are not referring to the difference in level of difficulty between introductory material such as Chapters 2 and 3 and mathematically advanced treatments such as Chapter 18; this division of reader effort is welcome. But the discussion of the material dealing with linear decision rules, as compared to that of managing individual inventoried items, left at least this reader with the impression that the latter material mainly represented a theoretical exercise at the time it was written. Such a conclusion is not based on the type of mathematics involved; in both cases the requisite maturity is approximately the same. Nor is the comment meant to convey any implication about the relative soundness of the two approaches. But the authors were able to write about the usefulness of the linear decision rules so as to cite in some detail actual applications; so far as a reader of this book can determine, such application experience in the same detail did not seem to be available for the inventory models. A similar criticism concerning the level of coverage may be made about Chapter 19, which deals with servo-mechanism theory in the context of production control.

Another weakness arises with respect to the economic criteria employed. There is much emphasis on costs, expected values of, and constraints on, aggregates, with very little enlightening discussion about the rationality of such criteria as compared to competing criteria. It is regrettable that this distinguished group of authors has foregone a critical discussion of the micro-economic implications of the assumptions; at best, the justification of the

selection appears to rest on the statistical adequacy of approximations and mathematical tractability. In contrast, Chapter 1 provides a clear and astute exposition of the philosophy and implications of utilizing mathematical techniques for solving such economic problems. This chapter also presents a survey of actual applications of the book's results.

In Chapters 16 and 17, the authors provide their own severe criticism with regard to the logical consistency between their various approaches. Here are found the difficulties inevitably arising in an attempt (1) to apply simultaneously aggregate and item-by-item detailed inventory and production rules, and (2) to design item-by-item inventory rules within a complex of a factory and warehouses, wherein there are important economic interactions surrounding the individual decisions.

We turn to a critique of this book in the context of its place within the growing literature on inventory theory. In the final Chapter (20), the authors themselves try to compare their work with that of others. The chapter might better have been titled "Other Techniques We Have Heard About." Given the level of achievement in the first 19 chapters, the authors certainly are to be excused for this incomplete and somewhat misleading treatment, but their readers should be well aware that the other schools of thought mentioned above also have made contributions of equal importance, in this reviewer's opinion, to the same set of problems. (Although the authors do not deny this conclusion, they are not motivated strongly enough to be convincing.) In the areas where actual applications of the theories have been made, the competing techniques are equally as practicable in terms of computational effort; in areas where applications are lagging, like mathematical difficulties beset all approaches (e.g., applications of multi-item and multiwarehouse models). The Carnegie team is to be commended highly for an apparently fine ability to combine mathematical and statistical analyses to meet the requirements for establishing workable procedures. To do this well, they found it essential to go far beyond recommending a "square root lot size formula" for every inventory situation, but not so far as to maintain complete rigor and generality of approach. Perhaps such a compromise is inevitable in order to meet their professed acid test (p. 15): how well the approach to decision-making works in actual practice. We shall know with certainty long before the next decade passes.

HARVEY M. WAGNER

Stanford University

Interest Rates and Asset Prices. By RALPH TURVEY. New York: The Macmillan Company, 1960. Pp. xiii, 109. \$3.00.

In this slim, useful, little volume Ralph Turvey develops an extended liquidity preference (L.P.) theory of interest, though rather more mechanistic than most of its prototypes. He rejects the loanable funds approach, declaring that he is "only interested in theories which are testable" (p. 16). Rebuttal from loanable funds theorists would be in order.

Turvey's standards for an interest theory are that "its relation to ordinary

economic theory should be apparent, it should be simple and, finally, it should be directly relevant to the real world" (p. 13). I think Turvey earns good marks on each score though there is lingering skepticism as to the close relevance of his theory in foreshadowing interest-rate movements.

Among the factors which can carry the equilibrium price of an asset to higher ground, Turvey lists (p. 14): (1) a reduction in the quantity of the asset; (2) an increased desire to hold the asset; (3) large initial holdings by individuals with a strong desire for it; (4) an increased quantity of money; and (5) a decreased desire to hold money. There is obvious interdependence in this list.

Not without precedent in interest analyses, Turvey feels impelled to focus his study upon government securities as *the* asset. Initially, he elaborates a conventional L.P. theory, with the important addendum, often neglected, of the influence of the *number* of bonds outstanding on the demand for money. (Along with others, notably Metzler, I have argued for the same recognition.) Turvey writes: "the number of bonds is just as important as the quantity of money" (p. 26). The insight should also cover an inherent "irreversibility" whenever the monetary authority buys and sells bonds at different prices in the course of open-market operations. The footnote reference to Kragh overlooks some recent literature on this matter.

In appraising the effect of the transactions demand for money on interest rates, Turvey's ideas are stimulating and would warrant ventilation, space permitting. One proposition is that "the larger the rise in real income associated with a given rise in money income, the larger . . . the demand for money" (p. 38). The force of this is dissipated, however, by the expectational content of the speculative motive which tends to be obscured in the author's account. His view that it is "only a probability" that transactions demand varies directly with national income, or that the effect of interest rates on transactions demand is a priori indeterminate, may be merely a theorist's arm-chair caution, almost exasperating in its agnosticism where practical guidance is expected. Do we know so little or do we fear to be in error in assessing topical events?

Compared to the calculated modesty here, the conclusion that a fall in income which lowers the demand for money must raise the demand for some other asset (p. 42) is surprising, for it rests on the particular supposition that the money supply is fixed and that new security issues are precluded. A tantalizing suggestion is that a rise in price levels and money income, including higher prices for real assets such as land and buildings, can lift the demand for bonds and *lower* interest rates (p. 44). A monetary enlargement (velocity) aspect must be an implicit key to the paradox. Expectational elements in all this are also significant.

Turning from a brief analysis of the influence of intrasector debts on asset demand functions, Turvey organizes a lengthier chapter with flow-of-funds data to explain government interest yields. Here his test rests on *ceteris paribus* assumptions and his main conclusion is that the average yield is "in accord with the theory. . . with one exception" (p. 74). He finds that an in-

crease of 10 per cent in the amount of money (and savings bonds minus bank loans) will lower the average yield by about .6 per cent. An increase in the monetary sector's debt holdings will also drop the interest rate; but he regards his computed effect as "implausible," and "not in accord with the theory," so that it remains "the one unsatisfactory feature of the regressions" (p. 76). For Turvey, intermediaries and private indebtedness complicate but do not alter the theory. An eight-page chapter on long- and short-term rates affirms "that people endeavor to match the maturity pattern of assets and liabilities," verifying not unexpectedly "that long-term sources of finance are resorted to when long-term assets are acquired" (p. 95).

Belatedly, before closing, he observes that commercial banks and the monetary authorities have been lumped together and "their actions treated as exogenous" (p. 100). Because of the difference in their behavior he proposes greater sector compartmentalization involving 12 asset-demand-supply functions, each containing up to 9 terms with a total of 108 coefficients. Confronted with this formidable model a final call for "some drastic simplifications" is sounded.

Having myself struggled with an appropriate definition of money once the monetary authority is separated from the commercial banks (see my *Approach to the Theory of Income Distribution*), and on the belief that banks exert a decisive influence in the government bond market, I think Turvey has attached too little weight to these institutions in the course of his study. He also misses the influence of anticipated central bank action. Nevertheless, L.P. theorists will be grateful to Turvey for a clear outline of relevant variables for a theory of asset prices to replace more sterile textbook accounts. His steps toward verification should also inspire emulation.

While its brevity fosters a sense of optimism, despite its directness and repetitiveness the book does not read easily. Innate difficulties of the subject are probably at the bottom of the heaviness, rather than stylistic defects.

SIDNEY WEINTRAUB

University of Pennsylvania

Exercises in Economic Analysis. By JOAN ROBINSON. New York: St. Martin's Press, 1960. Pp. xx, 242. \$3.75.

This small book is intended to serve as a basis for group discussions of important economic problems by beginning students of the science. Despite its title, it is not simply a collection of exercises. It starts with a concise treatment of the theory of production in a family economy, proceeds to an account of production and investment problems in a planned society, continues with a nice discussion of the theory of growth and distribution, and concludes with brief but surprisingly comprehensive statements of traditional price theory, the theory of industrial organization, and welfare economics.

The end result is a charming and provocative introduction to economic theory—original in outlook, full of pithy comments about every subject on which it touches; delightfully dogmatic about issues of scope and method, essentially accurate from a technical point of view but not so rigorous as to

stifle independent thought by prospective readers. Although the book is written specifically for beginners, moreover, many parts of the argument will appeal also to professional economists. Mrs. Robinson is at her best when she puts technicalities to one side and lets us have a clear view of the working of her magnificent intuition, and this she has done in full measure in the present volume.

Needless to say, the book is not without shortcomings. Like most English economists, Mrs. Robinson apparently finds it difficult to take seriously the writings of Continental and American scholars. Her terminology is correspondingly idiosyncratic, and her handling of topics like the theory of money and capital (to which English economists other than Keynes have contributed virtually nothing) is woefully inadequate. Throughout the argument, moreover, there is a tendency to confuse theory with applications; to proceed as if "the nature of Reality" dictated the use of particular theoretical models to describe particular concrete situations. Regarded as a vehicle for developing a "feel" for economics, however, the value of the book may actually be enhanced rather than diminished by virtue of these and other apparent faults. The stimulation of critical faculties is, after all, one of the first essentials in the training of professional economists.

Perhaps the most important thing to be said about the book is that it is a vastly more significant contribution to the existing literature than its size or title might seem to indicate. In her preface, Mrs. Robinson suggests that the only way to learn how economic propositions are arrived at is to derive some of them. In a similar vein, I would suggest that the only way to appreciate the over-all excellence of Mrs. Robinson's *Exercises* is to read it.

ROBERT CLOWER

Northwestern University

Macroeconomic Theory. By GARDNER ACKLEY. New York: The Macmillan Co., 1961. Pp. xv, 957.

Professor Ackley here displays an impressive expertise and ingenuity in the construction of models. The whole book is in fact an elegant piece of exposition. It is split into four parts: "Concepts and Measurement," "The Classical Macroeconomics," "The Keynesian Macroeconomics," "Some Extensions"—throughout all of which the same high standards of clarity and organization apply.

In Part I, after a discussion of basic concepts, the greater part of three chapters is devoted by Ackley to a detailed discussion of the concept and measurement of national income. Part II gives elegant diagrammatic expression to classical theory. I must however dissent from Ackley's idea (p. 109) that Ricardo's ideas about macroeconomic matters were "at best rudimentary." Having worked through the Ricardian model at some length, I am on the contrary increasingly impressed with the comprehensiveness of his macroeconomic thought. Only grant him his factual assumptions and his macroeconomics inexorably follows. He did *not* ignore effective demand—he only treated it from oversimplified assumptions.

Part III of Ackley's book, "The Keynesian Macroeconomics," is devoted to diagrammatical expression and explanatory text concerning (mostly) a very narrow version of Keynesian theory. But in Chapters 13 and 14, "Extensions" and "The Complete Keynesian Model," Ackley increasingly wavers between what might be called streamlined Keynesianism and later more sophisticated doctrine. Thus he has good fun with the tautological multiplier, but in restating Keynes seems himself to forget (p. 315) J. M. Clark's point that the stimulus to investment need not wait for "rounds" of payment to work themselves out. He also expresses (p. 332), surely by oversight, a misleadingly unqualified version of the paradox of saving: "a community that loses its thrifty habits succeeds in saving more than it had previously." In Chapter 14, however, Ackley is definitely misleading in his account of Keynesian thought. After devoting most of the chapter to the more narrow version of Keynes, Ackley suddenly (pp. 392-93) takes it all back and says "once we introduce expectations and a dynamic analysis the effect of a wage cut might be highly favorable." But he forgets to point out that Keynes (Chapter 19 of the *General Theory*) had said exactly the same thing and for the same reasons.

Part IV is devoted to inflation, investment, economic growth, and a summary. The chapters on growth are narrowly "economic": "We are concerned" (p. 506) "with the growth of an economy already employing modern productive techniques and highly developed institutions." The chapters on investment are interesting but on a somewhat narrow base. On page 507, however, Ackley seems to say that mere quantitative capital accumulation, "*without technical change*," can still add eternally to output and hence that the stationary state need never arrive. Perhaps he means without innovation, for the reference to "better" tools in the same passage surely means change. Yet apparently Ackley's views here have become those of Frank Knight—and one wonders what this does to the rest of the book?

To some extent, indeed, the study fails to live up to its initial promise. It reflects in fact the split personality which macroeconomics is increasingly developing, and it is to Ackley's credit that the conflict stands out so clearly. As an example, on page 8 he refers to the "increasing precision with which economists have formulated their concepts. Thus economists talk of functional relationships instead of the earlier and often vague discussions of 'tendencies' of 'causes.' . . . The existence of a functional relationship . . . means . . . a change in one variable is associated in some *regular and predictable* way with a change in another" (italics added); and there are similar statements. Yet if we compare the concessions made in Chapter 4 with the claims for precision of Chapter 1, I submit that the claimed precision vanishes. One is left either with "implicit reasoning" or else models too abstract to be workable or reliable. Perhaps this is the basic weakness of the whole school represented here.

The real merits of the book should not be obscured by criticism; yet to this reviewer anyhow, its basic structure seems fundamentally inadequate. A clue to the essential difficulty appears very early: Ackley says (p. 17), "A broader and more significant dynamics would include, as well, the movements of a system which is never in equilibrium, either because no equilibrium exists, or

because the movements of the system are not in the direction of equilibrium, or because of continuous changes in *external circumstances*—productive techniques, population, consumer tastes, government actions, to name the more outstanding ones” (italics supplied). But he winds up the section: “nevertheless, because statics is simpler, and because it provides a convenient, even necessary, starting point for dynamics, the primary method of this book is statics. Still dynamic analysis will not be neglected.”

But can one treat the forces named as *external* to the capitalist process? Years ago the writer remarked that approaches of this sort were like defining all “men” as eunuchs and then writing a “general theory” of the inability of “men” to procreate. The life blood of a capitalist and/or growing society is technical change and the resulting continual alteration of the “product mix” and expenditure pattern. The process is *intrinsic* not external. Only by neglecting this fact do we get theories of automatic glut, automatic decline of the marginal efficiency of capital schedule and so on. It is true that Keynes sometimes wrote in a manner which ignores this fact, and Ackley wrings the last drop of complication or implication from what might be called streamlined Keynesianism. But surely now at this late date, we should be realizing that Keynes’ analysis also had another aspect: the relation of innovation to pressure groups, ideology, price/cost relations—especially expected ones—and so on. Whether for example diminishing returns is operating for an increase in the capital stock in any given situation depends not on any mathematical capital/output ratio but on the social setting, the degree of potential technical change, and the institutional situation. The analysis of his book, despite its theoretical elegance, is never wide enough to yield reliable policy conclusions or understanding for the real world. I have contented myself here with pointing out the basic inadequacy. A long catalogue of praise and blame could be added, but it seems to me this would largely be needless repetition.

DAVID McCORD WRIGHT

McGill University

National Income and Flow-of-Funds Analysis. By JOHN POWELSON. New York: McGraw-Hill, 1960. Pp. xi, 550. \$7.95.

One among a growing number of textbooks dealing with income analysis and macroeconomics, this book emphasizes the framework provided by national income and flow-of-funds accounting. Income analysis is taught almost entirely by the use of arithmetic models which are worked out in terms of entries implied by the accounts. Little reliance is placed on graphic presentations or on mathematics.

Part I develops a simplified set of national income and product accounts. Complications arising from investment, business saving, government, and foreign trade are introduced in turn. The final chapter of this section summarizes the U.S. national income and product accounts as prepared by the Department of Commerce. The author refers to a more detailed treatment given in his *Economic Accounting* (New York 1955).

The national income analysis of Part II uses the accounting framework of Part I to develop simple models of the multiplier and the accelerator and the interaction between them. No attempt is made to present a theory of the determination of an equilibrium *level* of income, the analysis proceeding entirely in terms of changes from some (unspecified) initial position. Exclusive reliance is placed on period analysis, which the author warns us is no more than a pedagogical device. The models are expressed numerically in terms of the accounts; very simple algebraic solutions for the final equilibrium positions implied by the various arithmetic models are given, but geometrical solutions are entirely absent. The familiar Keynesian 45-degree cross appears nowhere in the book. After presenting a simple multiplier model with personal saving as the only leakage, the author extends his analysis to cover taxes, business saving, and imports, which are taken as functions of income. Emphasis is placed on the distinction between "functional" and "accounting" relationships, and the reconciliation of *ex ante* and *ex post* magnitudes is well done. No formal analysis is given of the exogenous tax multiplier, and the balanced budget multiplier is not discussed. The arithmetic models of accelerator-multiplier interaction cover both the convergent and the explosive cases. A brief chapter on the consumption function emphasizes the geometry of the function and statistical data (both cross-section and time-series) dealing with income and consumption, with little theoretical rationalization of the apparent empirical relationships.

A simplified set of flow-of-funds accounts is presented in Part III. The author does a good job of showing the relationship between the flow-of-funds approach and the national-income-accounting approach presented in Part I. The Federal Reserve System's accounts for the United States are given in a separate chapter. Special efforts are made to show the way in which the commercial banking sector fits into the accounts, although the author does not attempt a complete discussion of money and banking. Foreign transactions also receive emphasis. While the accounting framework is well developed, the absence of any theoretical treatment of interest rates and asset prices tends to reduce the usefulness of the author's effort to make "monetary processes an integral part of national income analysis."

Part IV, "Problems of Stability and Growth," which comprises close to half the book, is concerned for the most part with problems of inflation and external (balance-of-payments) equilibrium, with inflation receiving the lion's share of the attention. The great variety of inflation models may leave the student with the impression that "almost anything can happen" in inflation. While the author recognizes the importance of the distinction between spending decisions as given in money or in real terms and while he denies that "money illusion" necessarily characterizes the behavior of decision-making units, he tends to concentrate on those cases where some one's spending (either temporarily or permanently) is assumed to be given in money terms, so as to make his arithmetic models determinate. It is here that his accounting technique does not appear to be particularly useful. As a basis for discussing income distribution during inflation, there is, however, an interesting discus-

sion of the problem of deflating the national income accounts when wage rates, consumer-good prices, and capital-good prices change in different proportions, with resulting terms-of-trade and capital gains and losses within different sectors. The book concludes with a rather prosaic chapter on policy problems.

The major deficiency of this book is the absence of either a theory of the demand for money and the determination of interest rates, or a theory of production and distribution and the determination of wages and prices. A non-technical discussion of production frontiers, Say's Law, underemployment equilibrium, the effects of wage and price flexibility on aggregate demand, the Pigou effect, the marginal efficiency of capital, the interest elasticity of consumption and investment, the demand for speculative balances, and interest rate floors is compressed into some 24 pages. The author subsequently finds himself without the tools he needs for analyzing some of the problems he chooses to discuss, particularly inflation. The analysis of income distribution during inflation, for example, almost implies that real wages (and the resulting distribution of income between wages and "dividends"), or the rise of real wages over time, can be taken as exogenously determined, given, apparently, by some process of bargaining.

The book is well written, but rather long. While the multiplicity of arithmetic models adds to the length, the author's use of a mythical economy as another pedagogic device is a contributing factor to the book's size. While the affairs of Nolandia and the debates among its academy of scholars may enliven the book, this reviewer, with due regard for differences in tastes, believes the analogy is carried to an extreme.

The author has produced a book that will undoubtedly prove useful in those courses in macroeconomics which stress national income and flow-of-funds accounting and develop the analysis in terms of the accounting framework. In these respects, it is perhaps most nearly similar in its coverage to Ruggles and Ruggles, *National Income Accounts and Income Analysis* (New York 1956).

EDWARD C. BUDD

Pennsylvania State University

Economic History; Economic Development; National Economies

Trends in the American Economy in the Nineteenth Century. National Bureau of Economic Research. Studies in Income and Wealth, Volume XXIV. By The Conference on Research in Income and Wealth. Princeton: Princeton University Press, 1960. Pp. xi, 780. \$15.00.

"Another damned thick square book!" With this opening quotation the volume presenting the results of the 1957 joint sessions of the Conference on Research in Income and Wealth and the Economic History Association challenges comparison—in size—with Gibbon's *Decline and Fall of the Roman Empire*. Its publication has been eagerly awaited and some of the findings have already been incorporated in the recent edition of the *Historical Statistics of the United States*. The size of the book is explained by the inclusion of

papers by nearly a score of authors, together with statistical appendices and the comments of a dozen discussants. The fullness of presentation will facilitate further work in the field and provides an ample basis for technical criticism of the methods employed. The present review will not attempt this task but will instead consider the significance of the findings for economic history.

What the undertaking represents is a concerted attempt on many fronts to carry statistics within "the national income framework" into the terra semicognita of the nineteenth century. For a number of years 1899 was the border line of such systematic treatment, as witness a series of studies published by the National Bureau of Economic Research. The work of Simon Kuznets and others then pushed the dividing point back to 1869. The present volume attempts to go still farther, subject always to the recognized risk that what one of the discussants called "postcasting" may suggest a precision of knowledge which the original data cannot support. It may perhaps be said that the result is to carry the statistical border line back to 1839, but on an irregular front, with occasional forays into still earlier territory. The examination of output before 1840 finds it impossible either to confirm or refute earlier suggestions of a decline in income between 1799 and 1839. Most of the papers on the United States do not attempt to go back of 1839, and none of the three Canadian essays goes back of 1850. On the other hand the elaborate studies of wages and of farm output and investment deal with the entire century, the canals chapter presents figures for 1815 to 1860, and the availability of governmental figures makes it possible to carry the study of federal expenditures and of the balance of payments back to 1790.

The nearest approach to an over-all view of the newly won territory is given by Robert E. Gallman's figures on "Commodity Output," which represent approximations and estimates of the value added by agriculture, mining, manufacturing and construction from 1839 to 1899. In spite of the areas omitted, Gallman's totals cover perhaps two-thirds of the national output of the time and may therefore be used, at least tentatively, to suggest the amount and timing of economic growth. So taken, the results are striking. Over the 60 years commodity output increased elevenfold—perhaps, as the author suggests, the highest rate of growth experienced by any nation over so long a period. Per capita output in 1899 was about two and a half times that of 1839. As to timing, the Civil War decade represented not an acceleration of economic development, as has often been assumed, but a temporary interruption of a rise in per capita output that was rapid in the 'fifties and was resumed at a still higher rate in the 'seventies and 'eighties.

Distribution of this income among regions and states is examined by Richard A. Easterlin for the years 1840-1950. He finds a persistent tendency over the entire period for a convergence between areas in per capita income, and in one of its important determinants, the proportion of the labor force in nonagricultural occupations. To this the great exception is provided by the South, whose relative share in per capita income declined sharply from 1840 to 1880 and began to rise again about the turn of the century. Stanley Lebergott's wide-ranging chapter on wages calls attention to a number of differentials which

will interest economic historians, such as that between wage rates in the large mills of the Lowell type and those in other early textile factories. On the general level of labor incomes, he notes the gains arising from the shifts from slavery to freedom and from agriculture to other occupations but believes that real wage rates for nonfarm employment rose little or not at all between 1800 and 1880—a finding which he himself describes as the result of little more than “careful guesswork” and which a critic considers somewhat improbable in view of the great increase in per capita output.

Two essays deal with major fields of investment before the Civil War. The chapter on railroads does not venture to construct an over-all estimate from the scattered materials available. For canals, on the other hand, H. Jerome Cranmer presents a usable estimate of a little less than \$200,000,000 and allocates the figures on a year-to-year basis by assuming that the canals for which annual figures are not available followed the same “profile” of expenditures as those with more complete records.

On the balance of international payments, Douglass C. North presents the U.S. figures for 1790-1860 and Matthew Simon for 1861-1900. They employ the full modern arsenal of categories and derive the net flow of capital as a residual, comparing it with direct estimates where these are available. North's thorough study of freight earnings will be particularly appreciated, as well as his neat demonstration of a three-year lag between the arrival of Irish immigrants and the flow of remittances to the folks at home. Simon's handling of the passenger accounts won deserved praise from the discussant. Penelope Hartland uses similar methods in examining the Canadian balance of payments since 1868. The North-Simon figures render obsolete the Bullock-Williams-Tucker series which has been used by economic historians since 1919. Of all the estimates presented, those on the balance of payments are perhaps the most certain of immediate acceptance while a number of other chapters will have their greatest value as stimuli to further investigation in areas of particular difficulty. The volume taken as a whole represents a notable extension of the boundaries of statistical history.

CARTER GOODRICH

Columbia University

The Economic Growth of the United States, 1790-1860. By DOUGLAS C. NORTH. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961. Pp. xv, 304. \$6.75.

The task of the economic historian has never been easy. As an historian he has studied the past to satisfy his intellectual curiosity. As an economist he has turned to yesteryear in an attempt to explain today and to plan and predict tomorrow. Combining the tools of the two disciplines he has utilized quantitative data and techniques without neglecting qualitative, literary source material. Realizing that cold figures in and by themselves do not tell the entire story of mankind's evolution, he has found it quite impossible to comprehend economic behavior or to interpret economic development without taking an occasional glance at the ever-changing social and political frame-

work of society. In recent times, however, the widening scope of statistical and mathematical analysis has invaded one after another of the social sciences. The new emphasis on economic growth was an open invitation to the statistician, the mathematical economist, and the economic model builder to venture unto yet but sparsely trodden paths, and the new branch science of "cliometrics" (named after Clio, Muse of history) was born. North is one of this country's best known "cliometricians."

In addition to detailed studies dealing with specific segments of the U.S. economy during specific time periods, quantitative methods of statistics have been applied to wide areas of America's economic development ever since Mitchell published his *Business Cycles* in 1913. Taussig's work on tariffs, Kuznets' on the changing pattern of national income composition, and Burns' on production trends—to name but a few—are widely known among economic historians in the United States. But the attempt "to build a *skeletal framework* of the disparate parts which constitute American economic history today" (p. vii) by subjecting the pre-Civil War era to a statistical analysis is a bold undertaking.

To North, the era from the framing of the Constitution to the outbreak of the Civil War—and not the post-1865 era—was the critical, formative period. By 1860 the foundation for future growth had been laid and the fraternal struggle was but a temporary interruption in the gradual evolution of an already established, vigorous, expanding economy.

Discarding the business cycle as a "poor framework for the analysis of economic growth" in favor of long swings in economic activity "which characterized the economy after 1815" (p. 11), North divides his book into two parts, 1790-1814 and 1815-1860 respectively, with greater emphasis on the 45-year period immediately preceding the Civil War. Economic growth is described in terms of the evolution of a market economy, and economic change is explained mainly on the basis of price behavior. Most unusual, probably, is the extreme emphasis on foreign trade. Over half of all charts, tables, graphs, and maps (87 out of a total of 153, to be exact) deal with international economic relations. The natural resource endowment of any region is studied in regard to its impact on comparative costs in the production of exportable commodities. The character of export commodities is analyzed with a view to their respective influence upon the economic development of the regions from which they originate. Technological progress is examined to determine its effect on past, present, and potential comparative advantage. And the disposition of the export-created income is treated as the major determinant of economic growth. The author himself states that: "The gist of the argument is that the timing and pace of an economy's development has been determined by : (1) the success of its export sector, and (2) the characteristics of the export industry and the disposition of the income received from the export sector" (p. 1)—a proposition which, most certainly, does not stand unchallenged among economic historians.

North's book does not—and by its very nature cannot—present a complete, integrated picture of the economic development of the United States during

the pre-Civil War era. Too many topics must be slighted, too many questions must remain unanswered, and any evaluation of socio-political development must be reduced to a minimum if only the quantifiable aspects of economic development are subjected to extensive treatment. In North's book one finds slaves, for instance, discussed as important intermediate goods (p. 72), as capital investment (p. 122), or as the supply of labor in the *ante bellum* South (p. 128). Statistics are presented to show number of slaves per region and per plantation, prices of slaves, crop value per slave, profitability of slavery, etc., etc. But sadly lacking is a discussion of the slave as a human being, of the moral aspects of slavery, of the Dred Scott case, of the underground railroad, or of the major North-South compromises on the slavery issue. And in vain will one search the index for references to the Constitution, to such Supreme Court cases as *Gibbons v. Ogden* or *McCulloch v. Md.*, or to such individuals as Oliver Evans, Robert Fulton, Nicholas Biddle, Andrew Jackson, or Alexander Hamilton—important as all of these undoubtedly were to the economic development of the United States.

Yet, in all fairness to the author, it should be emphasized that he did not set out to write a complete socio-economic-political history of pre-Civil War America. On the contrary, he himself refers to his book as a "monograph . . . an extended argument with supporting statistical and qualitative evidence rather than an economic history of the period" (p. vii). As such, it is an excellent essay which should provide both stimulation and valuable quantitative information and interpretation to the student of the economic growth of the United States. Thus, while probably insufficient in itself as a text for even the first half of a course in U.S. Economic Development, it will undoubtedly prove valuable and find wide use as assigned reading and study material in conjunction with another, more conventional text.

HARRY G. SHAFFER

University of Kansas

Ocherki po istorii narodnogo khoziaistva SSSR (USSR Academy of Sciences, Institute of Economics. *Essays in the Economic History of the USSR.*) Moscow: Gospolitizdat, 1959. Pp. 405.

This collection of essays begins a new series of studies sponsored by the USSR Academy of Sciences. Its major objective undoubtedly called for a more eloquent demonstration of the alleged merits of the Soviet economic system. Its contributors had access to many original sources including the files of central and local state archives. Such source references may impress a casual reader, especially when the files of the Soviet archives are quoted to debunk certain claims based on official Soviet statistics (cf. p. 221). The relative thoroughness and objectivity of analysis ends, however, when general conclusions are drawn from the discussion of historical details in an apparent attempt to satisfy the overriding objective—the glorification of the Soviet economic system. It is not the purpose of this review to criticize this and other shortcomings common to most Soviet publications but rather to report the more interesting highlights of substance to U.S. readers.

The first volume is primarily devoted to the period of war communism and reconstruction. The inquiries touch upon a variety of different topics ranging from the discussion of central planning to specific problems in industry, agriculture, railroads, and regional economics. In the first study, the creation of the State Planning Commission is traced back to the principle of "democratic centralism," that is, a strong administration of the central government without choking off the creative activity of subordinated authorities and individuals. The practical realization of this principle is discussed in terms of a general review of the early emergency plans for agriculture, mining, and manufacturing with particular reference to Lenin's role in the planning activity of the central authorities.

The next study deals with the first electrification plan and its subsequent realization. Program "A" of this plan called for the reconstruction and more efficient operation of existing electric power plants, while program "B" outlined the construction of new generating capacities. In contrast to official statements, this study gives the impression that electric power was rather widely used in Russian industry before the revolution. There were already about 100 electric machine-building enterprises, including 30 well-equipped plants with more than 500 production workers each. A considerable proportion of coal mines, oil drilling, metallurgical plants, as well as the cement, textile, and other industries were already equipped with electric motors when the first Soviet electrification plan was launched in 1920. A total of 166 electric generators served the blast furnaces in the south of Russia in 1914. Another 23 electric power plants operated in the Urals. Electric motors accounted for more than half of all power required by major metallurgical plants, while some of them were almost completely electrified.

The third study elaborates on the administration of nationalized industry. During the period of war communism, there were no incentives for management to use resources efficiently as all enterprises were financed directly by the state budget. Shortages of fuel and raw materials made it impossible to utilize fully the capacity of enterprises—most of them operated at 10 to 20 per cent of capacity. The famine affected the efficiency of the labor force and reduced employment to two weeks, and in some industries to only one week, per month. Many industries including coal mining and railroads used up whatever they produced. The top Soviet leadership believed at that time that only a revival of trade and market instruments could save socialism in Russia.

This was the background from which the New Economic Policy emerged. Under this policy, all industrial establishments were classified into three categories. The first group included plants which could have been supplied with raw materials, food, and money. These enterprises were organized in state "trusts" and remained in operation. All the others were to be leased to private operators, and if this could not be done, they were to be shut down. The management of active enterprises was permitted to market a certain proportion of output at home and even

abroad in order to procure necessary supplies. In practice, this policy meant the operation of the most efficient enterprises by the state, leasing or closing all the others.

The fourth study in this series is devoted to Soviet fuel and metal industries. It covers a short interim period between the end of the New Economic Policy and the beginning of the first five-year plan. The discussion of technological aspects again gives the impression that Russian industry was relatively not so backward at that time. Excavators, conveyors, and electric rail transport were already used in pit and strip mining. The most advanced U.S. methods were adopted and perfected in oil drilling. However, frequent industrial accidents were commonplace. Alleged deliberate "wrecking" activity as well as the incompetence of personnel were officially blamed for the flooding of mines and accidental explosions. Plants and other structures were sometimes built without proper estimates or designs. Despite the mismanagement of resources, however, industry recovered and forged ahead according to various statistical tables presented in the text.

The next two studies deal with the organization of farming and with the marketing of agricultural produce. The collectivization of agriculture was not an immediate goal of the Soviet government during the reconstruction period; less than one per cent of all farms were organized in communes, artels, and agricultural associations. A large proportion of their members constituted have-nothing peasants and workers who left the cities in search of food and shelter. Although collective farms received a 25 per cent discount on their taxes, the rent which they paid for using the estates of former landowners exceeded three times the amount of all agricultural taxes. Furthermore, the wage systems of collective farms made no adequate allowance for the contribution of land, equipment, and other property by its members. In order to raise incentives the distribution of produce relied heavily on various labor participation criteria.

The other agriculture study considers the woes of Soviet agriculture during the period immediately preceding the collectivization drive. Under the New Economic Policy the output of Soviet agriculture increased but its marketed share remained below the prerevolutionary level. In order to raise agricultural deliveries, the government and cooperative agencies requested all farms to sign up contracts for future deliveries of their produce. In subsequent years, these contracts regulated not only the terms of delivery but also the type of crops to be delivered and prescribed farming methods in all details. At the same time an attempt was made to raise the level of agricultural production by subsidies and stepped-up deliveries of machinery and equipment. Tractors and other agricultural implements were either sold directly to farmers or were offered at a rental by tractor pools, which later became "machine and tractor stations." In the late 1920's, the expansion of state and collective farms made little headway despite more favorable government attitudes. The study makes a heroic attempt at arguing that Russian farmers gradually understood

and learned to appreciate the alleged advantages of socialized farming.

The nationalization of Russian railroads is discussed in still another study. It attempts to show that the owners of Russian railroads were dispossessed by local rather than by central authorities. In fact, the Commissariat of Transportation at first urged the local revolutionary committees to establish merely a general supervision, leaving the actual administration and operation of railroads in private hands. The former Transportation Ministry was in no position at that time to administer the railroads. It could only have hoped that some of the private companies would try to operate their railroads until the central authorities were ready to take over. The local authorities met usually also with great difficulties resulting from the lack of experienced personnel and the alleged "wrecking" activity of the former owners and employees. Some of the workers considered the railroads as their private ventures. They sometimes claimed the revenue and intercepted the transit traffic of food, fuel, and other vital supplies for their own needs. Numerous government decrees and harsh measures finally helped to restore order.

The remaining two studies are devoted to the republics of Central Asia. The nationalization of industry proceeded there in several stages. At first, only the enterprises of former Russian citizens were confiscated, while the citizens of Khiva and Bokhara received some compensation for their equities. The nationalization of the cotton industry and the railroads was followed by that of banks and other private enterprises. Consumer industries were confiscated last. The problem of administering the multitude of small enterprises became so immense, however, that some of the smaller enterprises had to be denationalized there in subsequent years.

The other regional study traces the industrial development of the Soviet Uzbekistan. While an informed reader will hardly find any important quantitative data in this study, a discussion of the evacuation of industrial establishments from European Russia to Central Asia during the second world war may be of interest to some historians.

The reviewed essays are not merely as comprehensive as the studies of Liashchenko and some other Russian and Western historians, but they nevertheless contribute to our knowledge by providing an additional source of useful information in the pursuit of truth about Soviet economic life. It may be hoped that the subsequent studies in this series will shed further light on more recent and crucial economic developments in Soviet Russia.

GEORGE J. NOVAK

Washington, D. C.

Theories of Economic Growth. By B. F. HOSELITZ, J. J. SPENGLER, J. M. LETICHE, E. MCKINLEY, J. BUTTRICK, and H. J. BRUTON. Glencoe, Illinois: The Free Press, 1960. Pp. 344. \$7.50.

This book is the product of a Social Science Research Council seminar held in the summer of 1956. While most of the material would be of some

interest to practitioners in the field of economic development, its primary appeal would be to students of economic literature and its evolution, for there is a wealth of source references in the numerous footnotes. The main theme is the history of economic thought relating to growth. Many current-day economists differentiate between development and growth—the former usually taken to mean the initiation of the “take-off,” the latter dealing with the acceleration of the rate once the take-off is well under way. In most of the older body of thought, however, the distinction between these two strands was blurred, and often not even recognized.

While most of the contributors review their areas in some detail, Buttrick's approach is different. He employs a mathematical analogy to illustrate the somewhat arbitrary and often unrealistic assumptions of the neoclassical thinkers. Although the author limited his attack to this group, this reviewer inferred that much of the criticism also applied to current model-building, especially of the Harrod-Domar or input-output varieties. This suspicion was re-enforced by Bruton's examination of the capital-output ratio concept. Bruton's remarks are directed at the rigidity of the assumptions—linear production functions, invariance of capital-output ratios, etc.—which do not reflect the changes inherent in a dynamic economy, and which, because of reliance on such simplified relationships, may arrive at conclusions that are not applicable to today's problems.

Tied in with this danger is the brushing aside of “noneconomic” factors, even though their interaction with the “economic” factors that are treated could lead to serious modifications of the latter. As an illustration, omission of inventions and their motivation is a serious error, since shifts in investments could affect the rate of invention, which in turn would alter the capital-output ratio and the profit rate, and thus the rate of investment.

For the underdeveloped-areas specialist the contribution by Spengler on “Mercantilist and Physiocratic Growth Theory” should be most relevant. The environment in which the mercantilist lived was strikingly similar to that of the present-day problem areas—poor, essentially agrarian, not too much manufacturing, yet within each country there existed relatively advanced centers from which some development could be generated. The Physiocrats' emphasis on agriculture would, of course, be less applicable to those aiming at industrialization.

Letiche's article on “Adam Smith and David Ricardo on Economic Growth” covers a period when these contributors were in an economy experiencing the take-off that was to give the British leadership in the 19th century. It is interesting to recall that Smith recommended that Britain should part with the colonies on a friendly basis, thus retaining their respect and helping to build up their trade with the former mother country.

E. McKinley contributes a comparison of Smith, Ricardo and Malthus while a second article by Spengler covers John Stuart Mill. The latter shows the increasing awareness of the importance of the noneconomic factors.

Hoselitz discusses the German Historical School. Here, too, there is a somewhat greater relevancy for current-day underdeveloped areas, for many in this group—e.g., List—were most concerned about industrializing an agricultural country that was already behind the manufacturing world (then it was the British example that was to be the guide). Quite a few of the passages regarding the noneconomic obstacles to progress read surprisingly like contemporary analyses. Incidentally, while Marx is treated, the space given him is quite brief compared with the impact of his writings.

In addition to his extended criticism of the capital-output ratio, Bruton's assessment of contemporary theory notes how little of the thinking is devoted to the fundamental problem of starting growth; most seem to be concerned with accelerating a rate of growth that has already been initiated.

The one shortcoming of the book is its limited usefulness to economists wrestling with the development problem. Many of the writers—especially the earlier ones—lived in an environment or concerned themselves with problems that were similar to those that confront the modern counterpart, the underdeveloped areas. While pertinent strands of thought can be gleaned from the various chapters, this reviewer wished that the emphasis had been more pointed. Many of the hints give the impression that other nuggets exist which might yield an idea that could be translated into action now. In particular, the "take-off" problem might have received more attention. While it is true that the subject was growth, and not specifically development, the writings examined could be more helpful with regard to the latter aspect than in relation, say, to the rate-of-growth debate so prominent in the United States.

EDWARD MARCUS

Brooklyn College

An Essay on Economic Growth and Planning. By MAURICE DOBB. New York: Monthly Review Press, 1960. Pp. vii, 119. \$3.50.

The title of this book is deceptively broad: it is really concerned with only one aspect of development planning, although an extremely important one—the allocation of investment resources. Turning away from the recently fashionable theories of economic growth which have been concerned almost exclusively with growth in capitalist economies, Dobb focuses on the question of what alternative approach is proper to analyzing problems of growth in a planned economy where capital is socially owned and investment is socially controlled. He emphasizes that the justification for centrally planned investment decisions in an underdeveloped country is not only a matter of removing uncertainty by coordination of decisions, but is even more importantly related to the proposition that the growth-potentiality of the whole economy will vary with the structural pattern adopted for constituent sectors or industries. An implicit premise of this essay is that such structural relations in production are more worth while as a focus of

attention than the income-expenditure balance upon which attention has been mainly focused hitherto.

Accordingly, Dobb concentrates on the structural relation between the sector of industries producing capital goods and the sector producing consumer goods. Recognizing the difficulties of trying to guide investment policy by referring to "optimum conditions" for maximizing welfare, Dobb approaches the problem more realistically by examining what are the key determining factors in growth which set limits to what a plan can hope to do in any given situation. He works through a two-sector model, first analyzing the conditions for choice of technique in the consumer-goods sector and the investment sector independently, and then considering the distribution of investment between the two sectors.

It is initially assumed that the basic investment determinant is the surplus of consumer-goods production over what is consumed by the producers of these goods themselves. The only degree of freedom open to investment policy in this situation is the choice of the technical form of the investment. The usual conclusion—choose the form of investment with the lowest capital-output ratio—is then shown to be inadequate. For although the capital-output ratio and the savings ratio are not at all closely related in a capitalist economy, this will not be true in a planned economy: any change in productivity in the consumer-goods sector, with a given level of real wages, will change the rate of surplus per unit of labor employed in this sector and must therefore affect directly or indirectly the resources available to the state for investment. If then the objective of policy is taken to be the maximizing of the economy's growth rate, the appropriate choice of technique will be that which maximizes investment potential, and this will involve a capital-output ratio greater than the minimum—the appropriate degree of capital intensity being higher, the higher is the level of wages relatively to productivity in the consumer-goods sector. This conclusion conflicts, however, with the attainment of maximum output and consumption in the present, and with the realization of maximum employment at the earliest possible date. It is only Dobb's value judgment on the desirability of maximizing the growth rate that resolves this conflict among different objectives.

When the model is extended to take account of the production of capital goods for use in the investment sector itself, the conclusion is reached that the choice of technique in the investment sector will still depend primarily on the "surplus-ratio" in the consumption sector. Emphasis is therefore placed on putting as much of the investment potential as possible into the consumer-goods sector, so as to encourage the maximum rate of expansion of the surplus product of that sector.

Once the assumption that investment is limited by the supply of wage-goods is relaxed, and it is instead assumed that the main determinant of the rate of investment is the output capacity of the productive equipment already installed in the capital-goods sector, then the crucial investment decision concerns the distribution of investment between the

two sectors. In analyzing this problem, Dobb makes it clear that the question of how investment is to be distributed between the two sectors and the choice of technical form for any particular investment are quite distinct issues of investment policy.

Although some of the specific conclusions of the model are rather austere and formal, nonetheless one cannot fail to be impressed by some broader inferences that may be drawn from the model. It is clearly demonstrated that a main obstacle to advance in an underdeveloped country may be the smallness of the agricultural surplus, or the "waste" of it on relatively unproductive purposes, which sets a limit upon total investment. It is also necessary to raise the ratio of investment in the capital-goods sector above a "critical level," and this implies an investment in increased productive capacity in the capital-goods industries in advance of any foreseeable expansion in the market for them—an "accelerator-in-reverse" sequence. Moreover, the model indicates that to achieve a high growth rate, it may be more important to give a high investment priority to the capital-goods industries than to have a large proportion of income invested initially.

Regardless of whether one agrees with Dobb's final observations on the role that prices can play and the extent to which investment might be decentralized to the enterprise level, he will still find much to admire throughout Dobb's theoretical analysis. The entire argument of this book is articulated with a high degree of technical competence, and it succeeds in systematically removing several ambiguities that have marred previous discussions of this subject.

GERALD M. MEIER

Wesleyan University

Economic Development—the Underdeveloped World and the American Interest. By WALTER KRAUSE. San Francisco: Wadsworth Publishing Co., 1961. Pp. vii, 524. \$8.50.

In the preface of this important book, the author declares his express intention to be policy-oriented. "Theory, description, history, and analysis all enter in varying amount, but they are viewed here primarily as a means to an end, the end itself being *policy*." Professor Krause, in this reviewer's opinion, has produced a compact book of high-quality workmanship and, as a "practical" policy guide, it unquestionably marks a new high in the literature of economic development. Many controversial issues are discussed in a candid and provocative fashion—some of the conclusions seem inescapable.

The book begins with a brief commentary on the basic characteristics of the less-developed countries generally: low income levels, low levels of nonmonetary well-being, emphasis on raw materials production, and poor manpower utilization. Also, the thorny problem of "vicious circles" is elaborated via the Nurkse-Myrdal model. Part II, "The Response of Underdeveloped Countries," encompassing 14 chapters, contains the au-

thor's outstanding contribution to development economics. Basic motivations—awareness of poverty, reaction against colonialism, etc.—which underly "The Great Awakening" are expounded. Two excellent chapters summarizing the alleged "Obstacles to Development" follow. In broad context, vicious circles are labeled as key blocks to economic progress; however, eleven more narrowly circumscribed obstacles—e.g., inadequacies of labor, low volume of saving, etc.—are cogently discussed. Krause concludes that political instability is the foremost noneconomic barrier to meaningful development, while a shortage of foreign exchange is believed to be the major economic impediment to growth.

With a frame of reference established, the author then launches into the core of his analysis. The development aspirations of any particular country are apt to fall short of being fully realized owing to inherent resource limitations. It is therefore imperative that economic planners, whether operating in a predominantly private-enterprise or controlled economy, be more concerned with the *direction* of their effort than with preciseness in planning. A convincing argument is offered in support of needed *structural* changes in the production orientation of most underdeveloped countries. If emphasis is placed on primary production at the expense of industrialization, the prospect for narrowing the income differential (which is apparently widening) between the "rich" and "poor" countries is not bright. Unstable international markets, coupled with chronic population pressures and the ubiquitous shortage of capital, create a situation in which such a direction of effort neglects the basic problem (i.e., lack of diversification), and tends to sustain the status quo. Realizing that the final decision pertaining to goals will be political rather than economic, Krause advises (p. 207):

... the economic planner may find that emphasis upon industrial growth will not in the short-run yield benefits per resource outlay equivalent to that of a frankly agricultural-type approach, but is likely . . . to yield relatively favorable results over the long-run in the sense of getting at and ameliorating . . . the fundamental structural shortcomings that otherwise act to impede consistent material progress. The economic planner is obliged to weigh carefully the alternatives at issue.

Albeit, he concedes that the prospect for this requisite structural change to be forthcoming on an adequate scale is not good. If, however, a change does evolve, how does one decide which industries are "best to push"? Here (Ch. 8) the author develops the concept of using "foreign-exchange-impact" as the final choice criterion of a project's inherent worth; namely, "any enterprise that is *foreign-exchange-earning* or *foreign-exchange-saving* is regarded to have merit in terms of this approach . . ." (p. 139).

Once a program's direction is determined and the high-priority projects are chosen, the question of financing becomes paramount. In the early stages, external assistance will necessarily play an important part in the successful launching of a plan—the sources, magnitude and form of such necessary aid are discussed in detail. In so far as development is to be forthcoming under democratic institutions and processes, Krause agrees with "those who regard

the matter of *access to external capital* as holding the key to the situation" (p. 274).

Part III, "The Role of the United States," begins with a résumé of U. S. foreign economic policy objectives and our dependence upon the international economy for certain indispensable imports. Also highlighted is the fact that political-military activity of the "cold war" is inextricably interwoven with all operations designed to keep the "uncommitted" nations out of the Communist orbit. Next the inquiry: If we are to provide meaningful economic assistance to these "poor" countries, what approach will be most rewarding? Private foreign investment outlays are thoroughly analyzed with the resulting conclusion "that it is unrealistic to expect the flow of private capital to do anything like the 'full job' . . ." (p. 322). The potential contributions of institutional assistance—e.g., World Bank, Development Loan Fund, Export-Import Bank, etc.—are then evaluated in an illuminating presentation which discreetly criticizes past and present performance of these organizations.

Foreign aid (i.e., our operations under the Mutual Security Program) is appraised in an exposition that disentangles much of the perplexity surrounding this activity. Although both arguments are objectively sifted, Krause—contrary to many writers—favors annual over multiyear appropriations, bilateral over multilateral channels, project over across-the-board allocation, and the linking of military and economic aid when possible. In each instance, his reasons for preference are defended persuasively. The question of agricultural surplus commodity disposal operations is examined in terms of pros and cons both from the vantage-point of the United States and the recipients. The author concludes with a "concern that *unilateral* action in the handling of surpluses invites harm to other countries" (p. 465).

Part IV, "The Challenge," deals with what course of action the United States should chart at this juncture. Faced with a dedicated global Communist economic offensive (which is traced historically) that will be intensified in the future, the answer to this question necessitates decisions of momentous consequence. Several procedural changes in our aid effort to the underdeveloped countries are recommended: (1) greater aid concentration is imperative, (2) aid should be used as a lever to stimulate greater exertion by the recipients, (3) a regional approach (e.g., common markets) should be fostered, and (4) the over-all objective should be to utilize the limited funds available in a way that positive short-term economic progress will be observable. In short, aid should be allocated so as "to produce *catalytic impact within the underdeveloped world*, . . ." (p. 504). The author sums up his personal view concerning the prospects for development in these countries during our time by wavering between some optimism and considerable gloom, but nevertheless sees an explosive situation that clearly calls for action. "One thing is certain: action or inaction, success or failure, a significant chapter in history will stem from *the problem of the underdeveloped world now at hand*" (p. 508).

Any commentator dealing with policy-oriented subject matter will necessarily invite controversy—this book will doubtless generate much disagree-

ment as prejudices are re-examined. It will be incumbent upon critics, however to defend their respective positions in equally sophisticated fashion. This reviewer, for example, has reservations about the tendency to relegate intensified agricultural activity to a secondary role, but appreciates the merits of Krause's argument. The substantive content of this book will serve as a solid base for any course in economic development. Also, it is *must* reading for knowledgeable policy-makers everywhere.

J. D. DeFOREST

Denison University

Choice of Techniques: An Aspect of the Theory of Planned Economic Development. By A. K. SEN. Oxford: Basil Blackwell, 1960. Pp. 122. 18s net.

The investment allocation problems of planned economic development can be thought of as occurring at three levels: (1) determination of the total volume of investment out of the national product; (2) the distribution of this total among industries; (3) the choice of specific techniques of production within each industry. Mr. Sen addresses himself primarily to the last of these classes of problems, although he soon finds it impossible to confine attention exclusively to one of three interdependent sets of decisions. The primary argument of the book is that the proper criterion for choice among techniques of production is maximum "reinvestable surplus" yielded by investments, rather than the rate of capital turnover, marginal social product, or import-export desiderata. The argument is thus closely allied with that of Galenson and Leibenstein,¹ and quite a bit of space is devoted to comparing this criterion with those suggested by Polak, Buchanan, Kahn and Chenery.² The "surplus" criterion is quite valid within the context of the model posited by Sen, provided that the economy's goals lie sufficiently far in the future. The models and arguments used serve to point out that planning criteria must include some explicit evaluation of the future and that distributional effects of different investments may be quite important.

The basic model breaks the economy into two sectors: (1) a private enterprise sector outside of government control and consisting primarily of agriculture; (2) a new public sector under central administration, having both a consumer-goods subsector and a capital-goods subsector which produces equipment for use in making consumer goods. The type of economy analyzed is characterized by underdevelopment, overpopulation, and disguised unemployment which results in an infinitely elastic supply of labor to the public sector at a low wage rate. The initial phases of the analysis rest upon the following assumptions: The capital-goods subsector uses labor alone to produce

¹ W. Galenson and H. Leibenstein, "Investment Criteria, Productivity, and Economic Development," *Quart. Jour. Econ.*, Aug. 1955, 69, 343-70.

² J. J. Polak, "Balance of Payments Problems of Countries Reconstructing with the Help of Foreign Loans," *Quart. Jour. Econ.*, Feb. 1943, 57, 208-40; N. S. Buchanan, *International Investment and Domestic Welfare*, New York 1945; A. E. Kahn, "Investment Criteria in Development Programs," *Quart. Jour. Econ.*, Feb. 1951, 65, 38-61; H. B. Chenery "The Application of Investment Criteria," *Quart. Jour. Econ.*, Feb. 1953, 67, 76-96.

capital goods; a surplus of output can be extracted from the private sector to support this labor; constant returns to scale; no technological change; capital goods have an infinite life; the wage bill is entirely consumed; the surplus generated in the public consumer-goods subsector (the difference between value of output and the wages bill in this sector) is entirely reinvested.

Quite naturally in such rarefied circumstances, the distribution of product between "surplus" and the wages bill controls the possibilities for growth of the capital stock. Hence the surplus criterion which ignores the zero opportunity cost of labor. Actually, the surplus criterion would correspond exactly with Chenery's social-marginal-product criterion if we follow a hint dropped by Chenery (a hint rather inconsistent with evaluating social marginal product, as Sen points out) that "the cost to society of employing unemployed labor is only the increase in consumption which results."⁸

The cumbersome algebra which one must contend with in the analysis of the basic model and its variants seems quite unrewarding. The only payoff of the algebraic treatment consists of specification of conditions of labor productivity and capital intensity which serve to identify the "maximum surplus" techniques and some reassurance that growth will be faster if you invest more. This feeling of algebraic futility reaches a peak when the reader gets to Chapter 4, "Some Doses of Realism," in which seven major assumptions are relaxed. Expecting all the earlier apparatus to be brought to bear on complex reality, one finds, alas, but one equation and one diagram.

Sen attempts to get at sectoral interrelationships by creating new sectors which supply capital goods to sectors which supply yet other capital goods to other sectors, eventually ending up in the consumer-goods sector. The initiating sector is always one which creates capital goods with brute labor. It seems to the reviewer that the problems of making interrelated investment decisions could be handled much more adequately by the combined linear-programming input-output techniques of Chenery and Clark,⁴ or, at the theoretical level, even by a multisector model incorporating traditional production theory.

An interesting aspect of the surplus criterion for selecting techniques is that, under Sen's assumptions, the government is led to a solution which is precisely the same as the purely competitive solution, namely combining labor with the capital available for investment until the marginal product of labor equals the wage rate, both being expressed in terms of a numeraire. This suggests the possibility of decentralization once the availability of capital is taken care of.

It is pointed out that higher wages will favor more capital-intensive techniques. Later it is acknowledged that if the government can control consumption, the discrepancies between the surplus criterion and social marginal product disappear. The last three chapters deal with some trade aspects of development and the problems of predicting and evaluating alternative growth paths. In this connection, one appendix deals with the views on time preference of

⁸ *Op. cit.*, p. 86.

⁴ H. B. Chenery and P. G. Clark, *Interindustry Economics*, New York 1959, pp. 71-130.

the Soviet economist Strumilin. Perhaps the most valuable part of the book consists of the last two appendices which are basically case studies involving spinning and weaving techniques found in India. Some interesting data give one the opportunity to compare the various criteria.

CHARLES W. HOWE

Purdue University

Economic Growth—Rationale, Problems, Cases. Edited by EASTIN NELSON. Austin: University of Texas Press, 1960. Pp. xv, 288. \$5.00.

Economic Growth consists of a set of ten papers, with two commentaries each, delivered before a conference at the University of Texas in 1958. The opening section of the book is called "The Rationale of Economic Development," although only one of the three papers in this section, Benjamin Higgins' "Elements in a Theory of Underdevelopment," fits the definition of rationale: "the underlying reason; rational foundation." Higgins selects from the partial theories of other writers those which best fit the facts in his judgment, and weaves them together into a general theory. He uses the population multiplier, technological change, international trade effects including the terms of trade and backwash reactions, and discontinuities in the strategic functions. The material presented is really an abridgement of Chapters 14 through 17 of his textbook, *Economic Development* (New York 1959), with the addition of some remarks on savings and investment models. Richard A. LaBarge's commentary on this paper is one of the more helpful contributions by the commentators; he not only straightens out some slips in notation in Higgins' equations but also raises excellent questions about some of the assumptions.

The other two papers in the section on "Rationale" are by Carter Goodrich and by Simon Kuznets. Goodrich deals with the contribution of economic history to economic development and vice versa. His paper is a companion piece to his short address appearing in the December 1960 *Journal of Economic History* on the same topic. Kuznets' essay is a comparison of present-day low-income countries to present-day advanced countries in their pregrowth decades in such dimensions as per capita product, agricultural land per capita, equality of income distribution, and so on. The comparisons are illustrated briefly with data, and followed by some remarks on the advantages and disadvantages of late starts in the growth process.

The second section of the book contains three papers on "Problems Arising from Rapid Development." Hans Singer surveys the doctrine of balanced growth and the big push. He finds the doctrine wanting because the typical underdeveloped country lacks sufficient capital to push ahead on all fronts at once. With scarce capital such a country must concentrate on investment which increases resources rather than on a broad investment program aimed at the marketing difficulty (p. 79).

Another problem is treated by Geoffrey Maynard in his analysis of inflation. His contribution is interesting because of his model and empirical evidence developing the thesis that inflation occurs when agricultural output

lags behind the growth of the rest of the economy, starting a wage-price spiral.

The third paper on problems is by Raul Prebisch. He discusses structural maladjustments in agriculture and in the foreign sector in Argentina. He makes extensive use of United Nations data and projections which are presented in detail in the report, *Analysis and Projections of Economic Development. V, The Economic Development of Argentina* (Mexico City, 1960). His conclusion is that the structural maladjustments must be corrected by both the programming of activities and by less state intervention with more incentives for private investment to meet the programs.

The last part of the volume is four case studies. Alfredo Navarrete, an official in Mexico's federal investment bank, has written a useful and comprehensive paper on Mexico's progress and her current problems. Alvin Mayne, of Puerto Rico's Planning Board, gives growth statistics and information about planning procedures in Puerto Rico. Although Mayne discusses Puerto Rico's peculiarly favorable tie with the United States, Calvin Blair's comment correctly points out that the tie should have been more emphasized in drawing conclusions about the relevance of Puerto Rico's experience as a lesson for other countries.

One of the most interesting papers in the entire volume—although perhaps someone who had read more about communist planning than has the reviewer might not find it so—is Rudolf Bićanić's survey of planning in Eastern Europe and in Russia. Bićanić, a Yugoslav, briefly discusses communist planning semantics and Marx-Lenin-Stalin planning theory. Most of his essay, however, is a history of the defects and break-down of rigid planning techniques in Eastern Europe. Nicolas Spulber's comment is helpful as a review in more familiar language of points in the paper. Spulber also analyzes why Eastern Europe has had to change its planning techniques much more extensively than Russia has.

The final paper is Bert Hoselitz's examination of India. He uses Indian planning data and an input-output table to make projections of capital requirements. His conclusion is that food output is the most crucial factor and that savings rates are only slightly less important in the achievement of growth in India.

Some common themes as well as some disagreements emerge from the papers. Half of the authors lay heavy stress on agriculture as a strategic factor in their theory or case study (Hoselitz, Prebisch, Maynard, Kuznets, Higgins, and Singer). As anyone must who studies problems of economic development, the authors devote a good deal of thought to population problems and institutional change.

One of the disagreements is on balanced growth. Both Goodrich and Singer express opposition to the idea, but Higgins says that it is a matter of "balanced growth or no growth at all" (p. 65). Another area of conflict is the role of the market. Prebisch, Higgins, and Navarrete are in agreement on the relative roles of planning and the market. Planning is to determine the framework. The market is to provide incentives, operating without bureaucratic inter-

ference to the greatest extent possible. However, Mayne and Hoselitz support less of a positive role for the market in their case studies. Mayne advocates direct employment of inefficient workers by the government rather than subsidizing their employment in marginal units of industry. Hoselitz wishes to cope with the problem of rural unemployment in India by small rural industries of a sort not likely to be developed by private enterprise.

What will be the place of *Economic Growth* on the bookshelves of students of the subject? It should be placed among those whose contribution is conveying empirical information. The most ambitious theoretical effort in the book, that of Higgins, is better done in his textbook; the other theoretical papers do not seem to make fundamental contributions. But the researcher looking for case studies and materials should not neglect those presented in this book.

CHARLES E. STALEY

The University of Kansas

Regions, Resources, and Economic Growth. By HARVEY S. PERLOFF, EDGAR S. DUNN, JR., ERIC E. LAMPARD AND RICHARD F. MUTH. Baltimore: The Johns Hopkins Press, 1960. Pp. xxv, 716. \$12.00.

This is the first major book to come from the regional analysis staff of Resources for the Future, Inc. A number of earlier R.F.F. publications in fields such as energy, minerals, and land have been excellent. This book goes beyond excellence to the definitive in its particular field—the nature and extent of regional variations in economic growth in the United States from 1870 to 1954. First, the book is comprehensive. The text of 609 pages is illustrated by 200 tables and 96 figures. The statistical appendix and the index require an additional 107 pages. Regional growth is treated in two time periods, 1870 to 1950, and 1939-1954; and in various categories including population and labor force, productive activities patterns, industrial structure, and income. For the more recent period a more detailed break-down into the sectors of agriculture, mining, manufacturing, and service activities is used, and much of the employment data is refined to the 3-digit level.

Second, the many tables and charts do not portray raw data assembled and reproduced; rather the data presented are the results of statistical refinement and analysis. Much use is made of a statistical technique "based upon the fact that the shifts in total employment (or in other important growth components) observed among the states and regions in relation to the national average are generated by two distinct types of phenomena." These are "proportionality employment shifts" and "differential employment shifts." The former is the result of different rates of growth among employment sectors in different regions of the country. Thus, a state or region heavily endowed with rapid-growth employment sectors grows in employment faster than the national average and thereby receives a greater proportion of the total growth in these sectors. Differential employment shifts on the other hand result from the growth within a given state or region of an employment sector which is growing slowly or not at all elsewhere. This distinction between types of shift

s repeatedly emphasized throughout the book. It typifies the effort of the authors to analyze regional variations in employment and income in such a way as to reveal at least some of the basic causes of these variations. It typifies also their view that the causes of regional variations in productivity and income are complex even in terms of comparative statics, and still more complex when the dynamics of changes over time are searched for. Unfortunately, there is no easy explanation of a given region's relatively low per capita income, nor an easy way towards the improvement of its relative position.

The objectives of the book are two: "to furnish information and insights which might be of value to the public and private groups concerned with various aspects of economic growth and decline as well as with natural resources"; and "to provide a conceptual and methodological framework as a guide for our own future research in resources and regions and for possible use by scholars working in regional and developmental economics, business economics, geography, planning and related fields both in the United States and in other countries."

The authors are to be congratulated on the extent to which they have achieved their objectives. These are, however, limited. The chief usefulness of this book to the more than ten thousand agencies in the United States concerned with area development should be to warn them of the futility of the usual gambits of advertising and promotion, tax concessions, and subsidies which are so often employed, and to encourage them to look more closely at the economic fundamentals of resources, industrial location, etc. Yet the book does not venture further into the positive realm of the identification of attainable objectives and the operational methods for moving toward them. Therefore, while the volume should be of real assistance to those directly concerned with the analysis of the employment and income problems of our current group of depressed areas it will not help them much in deciding what to do about those problems. It fails even to direct attention to the very real institutional barriers to full employment which underlie the economic patterns so skilfully analyzed in the book. Such factors are strategic in their importance and must be discovered by any given regional development group before policy can be discussed intelligently.

So, too, for the second objective. For one thing a conceptual framework which relies as heavily as does this book on the individual states as economic units is not really adequate for regional analysis. For another, while the methodology of the work is excellent and a useful guide within the scope of shifting patterns of industrial and resources use, the regional analyst needs to move beyond this methodology into such areas as the analysis of interregional financial flows and balances, industry-complex analysis, and multiplier effects before he can hope to forecast future regional trends or suggest appropriate policies for improving income and employment within the region.

All this is simply to say that one does not know enough about a region if his knowledge is confined to trends in relative variations in population, income, employment, and industrial patterns and the immediate economic causes of these variations. The acquisition of such knowledge is, of course, the

logical place to begin the study of regions of the United States; and in this sphere, and to this extent one need hardly look beyond the pages of this book for either the facts and their analysis or for the appropriate methodology.

MORRIS E. GARNSEY

University of Colorado

The Structure of the East German Economy. By WOLFGANG F. STOLPER, with the assistance of KARL W. ROSKAMP. Cambridge: Harvard University Press, 1960. Pp. xxv, 478. \$10.00.

While great effort has been devoted in the West to the burdensome task of estimating and analyzing the major indicators of economic activity in the USSR, our understanding of the operation of the Communist economies of east-central Europe has been held back by a lack of systematic studies of the economic growth of this area. To fill that gap with respect to East Germany, Professor Stolper has produced a work which, though it lays no claim to methodological innovation, is by virtue of its scope and its painstaking procedural detail a pioneering effort in the field of east-central European economic studies.

The bulk of the book describes and comments on the calculation of the gross product of the economy and its major sectors. In addition, however, there are two introductory chapters tracing the growth of population and employment, a critical analysis of East German production indexes, and the last chapter provides a brief view of the uses of GNP, including some tidbits of capital-output ratios. Stolper appears to have touched on material sufficient for the basis of at least another book. One hopes that his promised sequel on foreign trade and investment is not long in coming.

Since it would be hopeless to attempt to discuss the full range of the book's contents, the comments below are restricted to two issues: the price weights of the production indexes and the relative growth rates of East and West Germany.

Stolper has no trouble convincing the reader of the unsuitability of East German sectoral and global output indexes as valid indicators of growth and, consequently, of the necessity for an independent reconstruction. Those who have followed Western studies of the Soviet economy will find the main reasons for Stolper's rejection of the East German series old acquaintances: double counting, changes in coverage, inflated pricing of new products, multiple pricing in agriculture, the use of synthetic price weights (the so-called *Messwerte*) apparently devoid of internal consistency. (The East Germans have added a contribution—multiple pricing in industry.) His independent calculation employs two sets of price weights, German prices of 1936 and West German prices of 1950.

For purposes of comparison of postwar with prewar levels in either West or East Germany, prewar prices are, of course, *one* of the appropriate weighting systems. But troublesome questions do arise on the score of the meaningfulness of using prewar or 1950 West German prices as a gauge of East German growth since, say, 1950. Stolper acknowledges that a calculation in East Ger-

man prices would have been highly desirable, but this was ruled out by the general unavailability of price data and the impossibility of using East German prices as measures of alternatives foregone. However, he does not think much has been lost by the substitution.

The basic question is, do postwar West German relative prices even approximately mirror the scarcity-preference relations which would be embodied in a rational East German price system? Stolper thinks that the only relatively recent sundering of what was a political and economic unity is the reason why the question can be answered in the affirmative. One difficulty with his argument is that he fails to distinguish this question sufficiently clearly from that of the relation between West German and *actual* East German price structures. "Consumers' tastes," he says (p. 86), "are not likely to have changed very radically in the few years since 1945. Although consumers' choices are quite a different matter, it seems permissible to rule out the possibility that prices in East and West Germany differ greatly because consumers' tastes have grown apart." One of the obvious textbook distinctions between Communist and market-economy price systems is that between planners' and consumers' preferences as ruling guides. In this respect, surely, East and West Germany are as far apart as the United States and Soviet Union. Further, whether or not factor endowments of the two sections of Germany were similar initially, the direction of development since the partition has not been the same, and the real rates of substitution accordingly must have increasingly diverged. To argue, as Stolper does, that West German prices of basic materials "are in fact frequently higher than the producer prices in East Germany" (p. 87, note) is hardly relevant with respect to the true question of the real opportunity costs of the East German economy. For these reasons, I am not convinced that "any distortions introduced by using prices appropriate to West German relative scarcities to the East German situation would necessarily be much smaller than those introduced by similar procedures for any other set of countries, for example, using dollar prices for Soviet output."

The upshot of all this, it seems to me, is the necessity for rigorous care in the interpretation of the results of Stolper's calculations. For one thing, if prewar prices are one of the appropriate weighting systems for comparison of pre- and postwar levels in East Germany, another appropriate set of weights is a set of rational postwar East German prices. As I have already implied, Stolper has not shown, at least to one reader's satisfaction, that the two output indexes must necessarily show close correspondence.

Second, his confident conclusion that "the aggregate showing of the Federal Republic was undoubtedly and spectacularly better" [than that of East Germany] (p. 239) seems to me to represent an oversimplification. Stolper renders this judgment on a comparison of 1936 and 1955 levels in both countries. Considering the extraordinary differences in exogenous influences on the two economies between 1945 and the early 1950's—e.g., systematic aid on one side as compared with even more systematic despoliation, on the other—the meaning of this particular comparison is hard to pin down. When the comparison proceeds to the period since 1950, Stolper is much more cautious in

his judgments. But it is precisely in this period that the East German showing—measured by alien preference-scarcity rods, to be sure—appears quite respectable. The rate of growth per capita of industrial output was higher in East Germany in both 1950-1955 and in 1955-1958: in terms of postwar prices, East German rates for the two periods were 11.7 and 6.6 per cent respectively, compared with 11.1 and 4.4 per cent for West Germany. In per capita GNP, again in postwar West German prices, East Germany's growth in 1950-1955 was about the same as West Germany's (8.9, 8.8 per cent) in terms of East German commodity coverage and slightly less in terms of West German coverage (7.9, 8.3 per cent). In 1955-1958, East German growth was much greater (5.7 per cent compared with 3.7 per cent for West German GNP in 1954 prices).¹

Despite these reservations regarding the interpretation of his results, I believe that Stolper has placed us greatly in his debt. To the prospective reader I must repeat that this review could not hope to provide an adequate notion of the book's breadth of treatment and the wealth of information. Stolper's work will be mined for quite some time to come.

ABRAHAM S. BECKER

The RAND Corporation
Santa Monica

Der Ostblock, Vol. I. *Die Produktion des östlichen Wirtschaftsblockes einschliesslich China nach dem Schwerpunktprogramm*, by KARL KRÜGER; Vol. II. *Aussenhandel des östlichen Wirtschaftsblockes einschliesslich China*, by BRUNO KIESEWETTER. Berlin: Safari-Verlag, 1960. Pp. 395; 386.

These two books, one by Professor Karl Krüger of the Technical University of Berlin, the other by Professor Bruno Kieseewetter of the Free University of Berlin, aim to inform the German reader about the economic structure and collaboration of the Soviet Union, Communist China and the satellites.

Krüger's book offers an extensive survey of the resources, industries and transportation facilities of the Sino-Soviet Bloc. It discusses the efforts at co-ordination of economic activities through the development of transport links, the assignment of industrial tasks to individual countries and the development of common industrial standards. The detailed descriptions of facilities and activities are based on special news service reports published in Germany, besides other mostly Western sources, and they are supplemented by maps and photographs. The author's interest is attracted to some features that do not often receive attention in economic surveys. He discusses the role of the Russian and Chinese languages as instruments of political and economic "synchronization" and the related nationality problems; he reviews the exten-

¹ Derived from Stolper's Tables 88, 163 and 174. The rate of growth of West German industrial output has picked up markedly since 1958 (see the *Monthly Report of The Deutsche Bundesbank*, January 1961). The official East German index also shows a greater increase in 1959 than in 1958 but some decline for the average of first ten months of 1960 (*UN, Monthly Bulletin of Statistics*, March 1961).

ive educational and surveying efforts of the communist countries; and he shows a keen interest in the geographic and historical dimensions of the present-day Soviet, Chinese and Satellite phenomena.

While the book is rich in description it is poor in political economy. "The logic of the technically best solutions," Krüger says, "is of compelling force in the communist system" (p. 131); economic allocation decisions result from "free and easy conversations" in COMECON, "without apparent compulsion." One may well recognize, as the author does, that technological innovation is pursued vigorously and systematically under communist rule, without falling for such a naïve view of how "order is created" within and between the national planning systems. The absence from the planning deliberations of divergent economic interests and of political power factors, which some passages in the book seem to suggest, will sound as unbelievable to intelligent Western readers as to anyone who has had occasion to observe the planning system from within.

Thus the book has more to offer as a description of projects, policies, and resources than as an analysis of how economic coordination works in the Soviet Bloc.

Kiesewetter's book on the foreign trade system is somewhat better balanced in this respect. Besides describing the composition and flow of the foreign trade of the Soviet Union, Communist China and the satellites, with each other and with the outside world, the work evaluates the strengths and weaknesses of the trade system.

The book abounds in statistical tables, some carrying forward the detailed compilation of Bloc statistics which the author previously published in *Statistiken zur Wirtschaft Ost- und Südosteuropas* (Deutsches Institut für Wirtschaftsforschung, Berlin 1957); others reproduce data from Soviet Bloc and Western sources. The tables are embedded in commentary that should be educational, if not for the specialist in the field, then at least for the student, businessman and government official who has to deal with communist trade.

Kiesewetter surveys the economic penetration and synchronization of Eastern Europe by the Soviet Union in several phases after the second world war, and the Soviet efforts to employ international trade as an instrument for cementing together and enlarging the communist empire. He comments on the rigidity of the division of labor among the communist countries with their foreign trade monopolies and the bilateral arrangements into which they must fit their trade, and he brings out the dependence of the "socialist world market" on the markets of the free world for the valuation of transactions: inter-communist transactions generate no acceptable price standards of their own.

These shortcomings of the system, however, are counterbalanced by ingenious and aggressive attention to priority projects. Among these, the establishment of economic relations with economically developing or dissatisfied countries rank high. The book describes some of the efforts by which the Soviets seek to employ their own and satellite resources to offer assistance to industrial projects or in the marketing of surplus materials, always anxious to demonstrate the Bloc's capabilities in the face of deficient organization or

unimaginative action on the part of the Western industrial nations. The strength and flexibility of these efforts have their counterpart in the way domestic priority projects are tackled in the Soviet Union.

But when the bloom is off the priority (there may never have been one to begin with) the external performance of communist economies tends to be as unimpressive as its internal performance. The book goes some way in describing this seamy side of the Bloc's relations with underdeveloped countries, which have sometimes had their desires for continuous and mutually profitable trade disappointed. This pattern and the unmeasurability of the costs and benefits of trade in terms of the domestic resources of the Bloc countries result from the primacy of political warfare in the foreign trade system of the Sino-Soviet Bloc.

The two books offer an objective, if not always very penetrating, account of the economic structure and drive of the Bloc. The U.S. reader may find some institutional and geographic passages of special interest.

HORST MENDERSHAUSEN

The RAND Corporation

Soviet Economy, 1940-1965. By VLADIMIR KATKOFF. Baltimore: Dangary Publishing Co., 1961. Pp. 559. \$6.50.

It is characteristic of all books about current developments in the Soviet Union that dynamic changes in that country of flexible economic planning render the books out of date before they reach the book stores. Premier Khrushchev's sudden reversion in May 1961 to the Malenkoff policy of emphasizing consumer goods production will doubtless alter the precise directions of some of the projected statistical series in Professor Katkoff's current effort. Nevertheless, at the date of writing, *Soviet Economy, 1940-1965* represented a praiseworthy attempt to bring the general reader abreast of the latest facts about all aspects of the Soviet economy. It is well suited for its avowed purpose of serving "as a general textbook for courses in Soviet Economics, as a reference source, and for supplementary reading assignments in political science, history, and geography."

Katkoff takes the revolutionary step of accepting Soviet statistical data as "basically unpadding" and of greater validity than some of the methods and assumptions used by independent critical sources, each differing from each other qualitatively and quantitatively. Now that larger and more complete volumes of statistical data are being made available by the Soviet government every year, this is a welcome approach. The data in the book can be checked against Soviet sources and each series brought up to date as the latest figures are released.

In addition to presenting current information along the lines furnished by Harry Schwartz in his 1950 and 1954 versions of *Russia's Soviet Economy*, the author contributes rather original analyses of the new organizational structure in industry and agriculture and of the bureaucracy involved in their administration. There is a good evaluation of the push of both industry and agriculture to Siberia and how they are inevitably interrelated. The eastward movement in agriculture is traced to maladjustment in land distribution

going back as far as the abolition of serfdom and unsolved by the 1918 land law or collectivization after 1929. He points out that the government started encouraging migration to the East in 1939. He critically discusses the problems faced in attempting to increase agricultural outputs not only on the virgin lands but throughout Soviet agriculture.

Katkov, who is chairman of the department of economics, University of Baltimore, documents most of his factual statements with references almost entirely to current Soviet journals and statistical handbooks, although occasionally he fails to provide a footnote where it would be welcome for purposes of further checking. By and large his treatment is objective, although at times he seemingly cannot resist the temptation to beat the drums for our competitive system against central planning, which he says "destroys competition among producers, hampers improvement of goods, and obstructs reduction in the cost of production." "It is this absence of competition on the market," he adds, "that makes the Soviet economy static"—"static because the country does not have independent producers who, as in non-planned societies, compete for the consumers' markets and thereby create a dynamic economy." He concludes his questionable, novel dissertation on the "static" economy thus: "True, the Soviet economy is rapidly expanding, but this does not mean that the economy is dynamic. No matter how high the rate of growth might be, the economy remains static because of the absence of competition on the market."

There are valuable concluding chapters on the "Economic Potential" and "Challenge to the West." Some of the recent information on expansion of oil and natural gas production, prepared for a Congressional committee by the Library of Congress, I had just finished reading about in the Katkov book when I read the notice of the government study in the press.

ROLAND GIBSON

Washington College

Economic Systems; Planning and Reform; Cooperation

Studies in the Theory of Planning. By CHARLES BETTELHEIM. New York: Asia Publishing House, 1959. Pp. xii, 451. \$7.25.

Professor Bettelheim is one of the best known Western economists working in India. He is still relatively unknown in the United States and, based on a limited contact with English economists, not widely known in England. It is of interest therefore to have this book, which presents for the first time in English the general framework of his thought and its application to India, where he has served at the Indian Statistical Institute at various periods over the last six or seven years. The first part of the book is a translation from the French (his native language) of an earlier book; the second part consists largely of a report written by him as an adviser to the Indian Statistical Institute in 1955-56. However both parts are stated to have been revised before publication, and may therefore be assumed to fairly represent his thought in 1959.

The first thing to state is that Bettelheim is a Marxist economist, whose

categories and terminology are in Marxist language, rather than neoclassical terms. There is relatively little reference to the large literature in contemporary non-Marxist economics on either growth theory in general, or on the question of alternative technologies in particular—both of which problems take up most of the book. There is a good review of Russian literature in the area of choice of alternative techniques, but this too does not mention the similar work of Grossman and Kaplan.

The general discussion in the first part—and by far the longest part of the book unfortunately—provides a somewhat elementary review of Marxist general economic theory and growth theory in a very turgid and long-winded style (which may of course be the translation's fault). In this respect it compares unfavorably with the books and articles by Sweezy and Baran on the same subject. Apart from style and length there is a certain confusion and error, especially in the treatment of the role of interest—which the author, as a Marxist, does not recognize as an economic return. Yet in spite of this he states, in a footnote on page 36, that a planner in a centrally planned economy, in making choices among techniques of varying capital intensities, would choose "according to whether the period of waiting was excessive or not for the economy." He does not recognize that this is one of the purposes of the rate of interest; and he in fact contrasts this with the process of choice among technologies in a decentralized, capitalistic society where the individual businessman is governed in his choices by the numerous shifts in a rapidly fluctuating market rate of interest. Apparently he is not aware of the many types of interest rates, including the long-term rate, which is far more stable than the short-term rates; nor does he seem to be at all cognizant of how businessmen (or government officials) in a capitalist or partially planned economy do in fact make investment decisions. It may reflect my own training, but after reading the first, theoretical part of the book I was forcibly struck by the fact that "if interest did not exist it would be necessary to invent it." If Bettelheim had been prepared to formally recognize the existence of interest (rather than hiding its function in a footnote), the very lengthy discussion of alternative techniques could have been shortened drastically. Instead he plods through lengthy Marxist alternatives which lead to results crudely similar to those derived by using the interest rate, and not dissimilar to those reached by the more widely known classical and Keynesian growth theorists, but with less conciseness, precision and neatness.

Part II, a discussion of Indian economic planning, is far shorter, more precise, and generally more satisfying. It is unfortunate that one has to get to it through the lengthy first part (it would have been better to have published it independently). He rightly stresses the key role in India of raising investment to 12 per cent of the national income, if economic development is to succeed, and he also is correct in stating that the economy can do this. He is also rightly critical of labor-intensive techniques for the mere purpose of employment, and emphasizes the waste of resources that this implies. He stresses the importance of choosing among technologies in order to maximize the rate of growth of the economy.

However, his measure of the potential economic surplus available for investment is very crude, and in this reflects the weakness of the Marxian approach. He assumes that income from property in India (measured very roughly at best) is largely used for unproductive consumption, and that this could be diverted to investment. It would then be possible to reach the 12 per cent investment target. This is based in turn on the assumption that property income goes largely to a feudalistic, large-landowner class, which wastes its income. In fact the reason for the apparently large share of property income in the total, is that many of the farmers are small landowners; and they probably plow back into the land a large part of any income above that required to maintain themselves at low levels of subsistence. The National Sample Survey estimates that the 95 per cent of the farmers with land holdings of .1 to 30 acres own 70 per cent of the total land in India; while the 99 per cent with landholdings of less than 50 acres (a very large holding in India) own 83 per cent of the total.¹ If we most crudely assume that the income from the 30 per cent of the landholdings above 30 acres supports "unproductive consumption" it would yield a far lower investible surplus than Bettelheim assumes. One method advocated by Bettelheim to mobilize this surplus is a land reform program to give the "land to the tiller." On purely economic grounds there is reason to believe that the further fragmentation of landholdings is likely to reduce rather than increase total farm output, and thus the investible surplus. (Both Thorner and Raj who have written in favor of a similar program have stressed desirable psychological effects upon the farmer which are difficult to prove.)

This approach of Bettelheim arises out of the Marxian belief that present property income is largely illegitimate and wasteful. Rather than this ethical assumption as a basis of policy, it would be preferable to examine the possibilities of increasing taxation from agricultural incomes, especially in terms of the relation between present income (or landowning) distribution in the agricultural sector and the levels of rural taxation. Similarly the Keynesian approach relating increases in national income to increases in capacity to pay taxes seems far more fruitful and precise. Both these approaches have been examined in papers by several non-Marxist economists, and clearly indicate that the Indian population in general, and in the rural sector in particular, can pay higher taxes than at present with no decline in consumption, especially as development proceeds.

The Marxian approach is of value in stressing some—by no means all—of the group and class pressures which make needed changes in the agricultural and other sectors of the Indian society so difficult. Unless these are resolved by government action (or the actions of the Congress Party), it will be difficult to take steps necessary to insure a successful economic development program; and if the government or party, because of the pressures within it, is unable to take the steps necessary, the process of development may break down. Non-Marxist economists too often slur over the existence of these con-

¹ See P. C. Mahalanobis, *Science and National Planning*, presidential address before the National Institute of Science of India (January 1958), reprint, pp. 29-31.

flicts, and separate the economic problems from the political solutions.

The Marxist approach alone, as evidenced by Bettelheim and earlier by Baran, does not present a satisfactory approach to the economic problem; and in fact the crudeness of the theory, as used in Bettelheim's discussion of property income in India, makes an accurate analysis of the political economy of growth difficult if not impossible. Rostow's answer to Marxian theory, by the stages-of-growth analysis, slides over many of the difficulties of the growth process itself within each stage, because it relegates the problems of group and class conflict to a minor role. There is room for a political economy of growth that combines the analysis made possible by contemporary non-Marxian economic and growth theory with a treatment of the political questions related to growth, some of which are properly stressed by the Marxians.

GEORGE ROSEN

Kathmandu, Nepal

Essays on Economic Planning. By OSKAR LANGE. Calcutta: Statistical Publishing Society, under auspices of the Indian Statistical Institute, 1960. Pp. 72. 36 s.

Since the end of the second world war many countries of Asia, Africa and Latin America have been caught in the fever for economic development. Apart from political considerations, the form taken by their emerging social systems will depend upon whether their economies can provide adequate material gains for their people. They want to skip the usual course of history and want to transform their primitive technology into the most modern one within the shortest possible time. To this end they invariably turn to economic planning and look toward the countries which have had experience with it. This short monograph under review is a collection of three essays on economic planning written by an eminent authority who in addition to being a professor of economics at the University of Warsaw is also the chairman of the Economic Council of Poland. These essays were written during 1955-56 when the author was visiting the Indian Statistical Institute in Calcutta.

The essay entitled "The Fundamentals of Economic Planning" is a description of techniques of planning as employed by the Central and East European countries as well as China. Even though the general principles of economic planning in these countries are the same as in the Soviet Union, in practice they vary somewhat. A capitalistic sector is tolerated in varying degrees. Usually it plays a very minor role, but in a country like East Germany "the capitalistic sector plays a substantial role in industry and trade" (p. 2). The plan is concerned with a socialist sector of nationalized enterprises and co-operative enterprises, a sector of small private commodity producers, and a capitalist sector usually in agriculture. The fundamental concept of economic growth is that industrialization is possible only through public investment, and hence the emphasis upon the development of the socialist sector of the national economy. To achieve this aim and to bring equilibrium in the various sectors of the plan, the increase in the means of production must proceed at a higher rate than the increase in the production of consumers' goods (p. 5). If a bottleneck appears between supply and demand in a par-

ticular market, it is corrected by changes in reserve stocks in the short run and a price change or revision of the output target in the long run. Usually capitalistic methods, such as the use of wage differentials, are to provide the incentive to production. Where these do not work competition among the working groups is encouraged. For example, in Poland an "efficiency flag" is allotted quarterly to the best working coal mine (p. 19). The author notes in the preface (written in 1958) that originally when these plans were instituted, they were all highly centralized. But recently marked changes have been introduced in the form of diversification and decentralization of planning, particularly in the management of industry.

The essay entitled "Some Observations on Input-Output Analysis" argues that true application of this principle is in a centrally planned economy. It notes the contribution of Leontief in this field and the use of the technique in the United States economy, but it assumes "that this analysis achieves its full justification only if applied as a tool of economic planning" (p. 41).

From this reviewer's point of view the short essay on "Some Problems concerning Economic Planning in Underdeveloped Countries" is most interesting. The author believes that since the present underdeveloped countries remained underdeveloped in the past because of "foreign monopoly capital," "neither is industrialization nor economic development possible through the influx of foreign capital" (p. 36). His prescription for economic development and capital accumulation is simple: "economic development can take place *only* on the basis of public investment" (p. 36). Citing the case of India he advocates land reform whereby land should be distributed to the landless labor (p. 36). To develop the public sector, government should tax more, raise more state loans and incur more deficit financing. He concludes by saying that the economic development of an underdeveloped country is possible *only* through the development of the economic foundations of a "socialist society" (p. 39).

Indeed, Lange's pill would be very hard to swallow for the economic planners of India or for that matter any of the underdeveloped countries that have to work within the framework of parliamentary democracy. Presently they are in dire need of foreign capital (India's current plan assumes a deficit of \$4.5 billion, foreign exchange). Too much deficit financing may bring hyperinflation. Redistribution of land among landless labor does not automatically insure higher productivity. If the present level of consumption is cut down for any length of time, it may bring political revolution. While suggesting that balance be kept between public and private enterprise, an observer comments "Perhaps the greatest unsolved problem of the Indians is to find some way to insure efficient public entrepreneurship under the general aegis of a parliamentary government. . . . neither the U.S.A. nor the U.S.S.R. has much experience to offer. The one lacks the public corporations and the other the parliamentary democracy."¹

In spite of the orientation of this monograph to the Soviet-type planning, it is a welcome addition to the growing literature on economic planning.

RANBIR VARMA

Long Island University

¹ J. K. Galbraith, "Rival Economic Theories in India," *For. Affairs*, Apr. 1958, p. 596.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

Techniques of Monetary Control. By JOSEPH ASCHHEIM. Baltimore: The Johns Hopkins Press, 1961. Pp. ix, 164. \$4.50.

This interesting and thoughtful volume is concerned with the *modus operandi* of central banking. Until fairly recently, most monetary theorists—with a few notable exceptions—had been content to start their analysis of monetary policy more or less from its impact on the money supply or on some closely related variable, such as the interest rate. They then proceeded to the substance of their analysis, viz., tracing the subsequent effects through the economic system. In brief, and at the risk of oversimplifying, most analyses of monetary policy started with a postulated ΔM and then went on from there.

Professor Aschheim's book, however, is primarily concerned with the stage *before* that. In recent years, controversies over such matters as the "bills only" policy, the functioning of the discount mechanism, and the regulation of nonbank financial institutions have stimulated considerable interest in how the monetary authorities bring about that ΔM in the first place. Aschheim's book, in this vein, thus joins the growing but still sparse volume of literature that deals in depth with the instruments of monetary policy.

Practicing central bankers, of course, have always had to wrestle with these problems. Their immediate attention is generally focused not so much on ΔM nor on interest rates or the flow of credit for that matter, for all of these are only indirectly and usually imperfectly under their control. Rather, their immediate objective is more likely to be the state of member-bank reserve positions, the one variable most subject to their control. Their formulation and execution of day-to-day monetary policy, therefore, largely consists of first assessing the effects on bank reserves that are likely to result from the use of one or more of the instruments at their disposal, and then, or perhaps concurrently, assessing the implications for the other objectives that they would like to influence in turn.

But, as Aschheim makes clear, what these other objectives are—whether the money supply, interest rates, or the flow of credit, for example—will necessarily influence the decision as to which particular instrument or combination of instruments should be utilized to alter reserves. For the instruments have differential effects on the level and structure of interest rates, on bank liquidity and profitability, on the state of expectations, and on many other variables. Thus the problem of the optimum instrument-mix arises, involving the relative appropriateness of the instruments under various circumstances: when and how should each instrument be used, how should they be coordinated, are more instruments necessary or would less be adequate?

Aschheim devotes a chapter to each of the following topics: open-market operations versus variations in reserve requirements, supplementary security reserve proposals, the "bills only" policy, the discount rate, moral suasion, the extension of controls to embrace nonbank financial institutions, and the

regulation of commercial bank time deposits. Inexplicably, selective credit controls are not mentioned.

The author's views on many of these subjects are sure to provoke debate. For example, he believes that the discount mechanism is in need of thorough overhaul, that "bills only" has seriously hampered monetary policy, and that the Gurley-Shaw thesis is in error both empirically and theoretically. He concludes that it is not necessary for the central bank to directly regulate nonbank financial institutions, since the existence of our large and widely distributed government debt already enables the central bank to control these institutions effectively via aggressive open market operations. Indeed, Aschheim emphasizes repeatedly throughout the volume that the large and widely held public debt strengthens monetary policy by serving as an efficient transmission mechanism through which the intent of the monetary authorities can be effectively implemented. Unfortunately, he never fully explains exactly how this process is supposed to work, so that after a while it starts to acquire some of the characteristics of a *deus ex machina*.

One final comment, with reference to Aschheim's rather complete rejection of the Gurley-Shaw thesis. An important part of his case against Gurley-Shaw rests on his empirical finding that the decline of commercial bank assets as a proportion of the assets of all private financial institutions had already run its course as long ago as 1929, and that since then the commercial banks may have even improved their relative position slightly. However, the statistics he offers as evidence to support this proposition terminate with 1952 data, which is before the tight-money years of the 1950's had really begun. It is difficult to comprehend the justification for this procedure. Elsewhere in the book Aschheim carries his statistics through 1959 or mid-1960. If he had done so in this case—and the data are readily available—he could not have failed to notice the rather substantial decline in the relative importance of commercial banks that has taken place over the full time span since the end of the second world war.

LAWRENCE S. RITTER

New York University

Money Under Review. By W. MANNING DACEY. London: Hutchinson & Co., 1960. Pp. 175. 25s.

In the opening sentence Mr. Dacey tells us that there has recently been "much questioning of traditional beliefs about the working of our monetary system." This questioning, so far as Dacey is concerned, focuses on the instruments of monetary control. His discussion of money and near-money, of currency and deposits, of the structure of bank assets and liabilities runs entirely along traditional lines. It is, incidentally, one of the most lucid and felicitous treatments of these matters I have seen anywhere.

When he comes to the traditional instruments of central bank control, bank rate and open-market operations, however, Dacey calls in question the validity of long-accepted conclusions. The rise of the Treasury bill as the dominant type of money-market asset has in fact, he thinks, rendered these instru-

ments quite ineffective. For, as long as the banks have a more than adequate supply of liquid assets, i.e., Treasury bills and call loans, they can frustrate any attempt by the central bank to make them contract their loans and deposits by either letting their Treasury bills run off or by calling their loans to the discount houses, thus forcing the latter to do the same thing. But if the banks and the discount houses reduce their holdings of bills, the Treasury will have to turn to the Bank of England, and the resulting increase in bank reserves will exactly offset whatever reduction the Bank had brought about through its initial open-market sales.

From this it follows that the banks' cash reserves are no longer of any real significance. What is important now is the liquidity ratio, that is the ratio of liquid assets—which, taking the banks and the discount houses together, are essentially Treasury bills—to deposits. Correspondingly, the expansion factor is no longer 10 or $12\frac{1}{2}$ to 1, but rather $3\frac{1}{3}$ to 1, since the banks are assumed to regard 30 per cent as the minimum liquidity ratio. This discovery has been stressed by other British monetary writers as well in recent years. (See, for instance, Ch. 9 of A. C. L. Day's little book, *The Economics of Money*.)

In one respect Dacey's revisionism is less far-reaching than Sayers', or, in at least some of its passages, the Radcliffe Report's. Sayers goes so far as to say in his presidential address to Section F that "restriction of the supply of bank deposits, if long continued, can be expected to become increasingly ineffective as a curb on total demand, because the demand for liquidity can be so well satisfied from other sources."¹ Dacey explicitly criticizes the Radcliffe Committee for giving support to this view: "... this glosses too easily over the basic distinction between money and other liquid assets . . . money does not merely represent a particular form of liquid savings; it constitutes the means of effecting actual payments. Any other assets, before their value can be realized and made available for spending, must first be turned into money; and in general this means that some holder of actual cash must be induced to part with it" (pp. 33-34). The terms on which holders of cash will part with it depend, to a considerable extent, on how large their holdings are.

In another respect, however, Dacey's revisionism is more extreme than the Radcliffe Committee's. The Committee imply, he says, that if the Bank of England "were prepared to raise Bank Rate drastically it would be able to prevent the exchange of Treasury bills for cash. . . . The truth is surely the opposite: even wide fluctuations in rates . . . will not necessarily induce any contraction in the supply of market bills . . ." (p. 83). Here the roles are reversed; it is Dacey who overlooks the terms on which the exchange is made. The fact that higher rates will not necessarily cause the Treasury to reduce the supply of bills does not alter the fact that rates are higher.

In this and many other passages Dacey implies that interest rates are of no importance. He says, for instance, "creation of a money market stringency will not in itself compress bank deposits" (p. 21). And he cites the fact that

¹ *Economic Journal*, Dec. 1960, 52, 723.

in 1957 "it did not prove possible to prevent a considerable increase in the quantity of bank deposits" as evidence of the ineffectiveness of traditional instruments of central bank control (pp. 19, 111). But, one cannot help asking, isn't the stringency itself enough? Why must we also have a contraction of deposits? Was not the rise in interest rates in 1957 enough to do the job, even though deposits increased?

Dacey's concern with the quantity of money as such is, in part, a concomitant of the importance he attaches to the real-balance effect. He often seems to believe that the amount of cash holdings, in real terms, is the major determinant of aggregate spending. But it may also be a product of the intensity of his anti-inflationary zeal. Dacey has, quite understandably, been alarmed at the danger of a permanent inflationary psychology's taking hold. In reaction, he goes to the opposite extreme of demanding double guarantees in the form not only of higher interest rates but also of an absolute reduction in the money supply.

There is much else in this book: the discussion of funding as an instrument of monetary control, or of index bonds as a means of coping with a settled inflationary psychology, to mention only two examples, which cannot be covered in a brief review. Whatever he is dealing with, Dacey is both an expert in his command of the technical material and a craftsman in molding it into clear and readable prose. Economists who want to know what has been going on in the English monetary system in recent years will find his book a valuable source of information and a pleasure to read whether they agree with all of his conclusions or not.

ALAN R. SWEEZY

California Institute of Technology

Politica monetaria—evoluzione e aspetti odierni. By ALBERTO FERRARI.
Milan: A. Guiffre, 1959. Pp. xv, 331. L. 2500.

Since the revival of monetary policy in the early 'fifties, investigations made and articles written on its various aspects have not been accompanied by an adequate review of the significance of underlying changes. We are perhaps at the threshold of a new revision of monetary concepts which may prove to be of an importance equal to that which accompanied the shift from the automatic gold standard of the years before the first world war to patterns of currency management in the interwar and postwar periods. In advanced and developing countries the growth of institutions combining new forms of financing with growing liquidity has given rise to conditions under which traditional approaches and instruments of quantitative controls leave much to be desired. This study by Dr. Ferrari, General Secretary of the Bank for International Settlements, provides a setting in which monetary policy is presented not in a pattern of fixed principles and rules, but in its evolutionary development over time. The book is divided into three parts, the first providing an evaluation of institutional factors; the second dealing with the interrelation of factors and theories; and the third, with current monetary policy.

The author makes the interesting point that under the original gold standard, as it was practiced at the time when gold or silver coins were the only cir-

culating media, a monetary policy could not exist, as shifts in economic conditions in one country were automatically reflected in a flow of metals from or to other countries, and thereby in shifts in the supply of and demand for money. The advent of monetary policy was a consequence of the emergence of subsidiary means of payments—first in importance, bank notes and, as time went on, deposit accounts and checks, so that the task of regulating the volume of money came to encompass the control of bank credit. In other words, the development of monetary policy is related to the growing importance of nominal money in substitution for real money.

This process explains, and in a sense is responsible for, the transformation of the bank of issue into a central bank, the regulatory organ of money and credit. Ferrari notes that as long as the state and the central bank operated under the gold standard, they were both bound to follow the rules of the game, as the system could only operate on an international basis, and the domestic economy therefore had to be adjusted accordingly. With the growing importance of nominalism in money, monetary standards are operated under sets of man-made rules, and monetary policies are accordingly adjusted to economic policies and national objectives. Viewed in this light, the relations between central bank and state, and monetary policy itself, can not be regarded as a purely monetary phenomenon, but as part of the general economic situation reflecting availability of and requirements for resources on which the state—through its governmental organs—exerts the ultimate controlling power. Ferrari remarks that “independence” of the central bank is a two-level concept—basically, no bank (whether central or ordinary) can operate successfully without freedom of judgment with respect to opportunity and risk; but, as a public and technical organ, a bank must operate within the framework of laws and regulations and subject to the sovereign power of the state.

This evolution of monetary policy and the central bank has had a counterpart in the evolution of monetary policy, but the changes in the economic and banking systems have generally progressed faster and farther than either policy or thinking. As noted by Ferrari, the concept of the gold standard and the way it worked were never clearly presented (nor perhaps understood) during its time and perhaps not until the recent and searching work by Bloomfield; and even now there is hesitancy on the part of some economists (e.g., Harrod and Robbins) and technical groups (such as the Radcliffe Committee) to admit the importance of quasimoney and velocity in the application of monetary policy. Fundamentally, the approach to monetary policy continues to be related to Fisher's influence, through his quantity-theory analysis; and the new instruments and techniques which have been developed since the interwar period stress “volume” and avoid the more complex aspects of velocity of money. In fact while central banks of underdeveloped countries have experimented with new forms of monetary instruments, the central banks of Europe, and more particularly that of the United States, have manifested self-restraint in the use of traditional instruments and in the development of new ones. Ferrari notes that the Radcliffe Report (and, one

may say, real forces in many countries) may serve as a catalytic element in the development of new concepts in regard to monetary policy; and his interpretation of the Report, in the light of current theories and banking development, is among the most penetrating parts of the book.

In the introduction, Ferrari says that the purpose of his study is to achieve a synthesis of institutional, theoretical, and policy aspects. The book moves consistently from the historical approach to analysis of theories and policies to an examination of the current situation. One may regret, however, that this illuminating study remains centered (except in a few places) on the traditional central banks of Europe and the United States, and throws little light on the concepts underlying and the practices of those newly emerging institutions of Latin America, Asia, and Africa which are in their own way following new paths of monetary experience. Those who are concerned with the difficult task of the central banks of Europe and the United States should perhaps stop to recognize, in a more constructive and less critical way, the task of those central banks which are called upon in this turn of history to combine internal monetary stability, accelerated economic development, and a viable balance of payments—in combining, in other words, a regard for the political aspirations and the economic realities of their own countries. In reminding us, from his vantage point in Basle, that concepts, practices, and objectives of monetary policy are but passing aspects of the ever-changing political and social pattern of our world, Ferrari is paving the way for a reappraisal of the changes in the financial and economic structure now occurring in advanced and developing countries throughout the world.

FRANK M. TAMAGNA

The American University

The Federal Reserve System, Purposes and Functions. Fourth Edition. Washington: Board of Governors of the Federal Reserve System, 1961. Pp. xvi, 238.

The fourth edition of this familiar book is extensively reorganized and some important new material has been added. The chapter on "Selective Credit Regulation" has been dropped and the discussion of selective credit controls, has been included, with that of general credit controls, in a chapter entitled "Instruments of Monetary Regulation." A new chapter, "The Credit Market," follows a discussion of the "Structure of the Federal Reserve System." This chapter is followed by a discussion of "Interest Rates," "Influence of Reserve Banking on Economic Stability," and the "Supervisory Functions of the Federal Reserve" (3rd ed., Chs., 10-12; 4th ed., Chs. 6-8). The factors influencing member bank reserves are discussed in Chapters 9-12, inclusion of the "Balance Sheet of the Federal Reserve Banks" (previously Ch. 13) making this treatment more complete. The second new chapter, "Short-Term Changes in Bank Reserves" is included at this point. There is a concluding chapter on "Service Functions." Finally, the new edition makes more extensive use of charts and tables, 28 as compared to 15.

Most of the changes should make this edition even more valuable than its

predecessors as supplementary readings in the first course in money and banking or in principles of economics. Even if the new organization does not appeal to some instructors, the chapters are written as units and may be assigned to conform with individual needs. Many students will find the chapters which discuss the application of instruments of monetary policy and the effect of monetary policy on the economy extremely helpful in understanding these difficult subjects. The addition of the chapters on "The Credit Market" and "Short-Term Changes in Bank Reserves" is long overdue. They should prove valuable aids to understanding the dynamics of monetary policy.

Although the chapter on credit markets provides some insight into the functioning of those markets, it falls short of the desired goal. The treatment is oversimplified. No mention is found of "the money market" nor of "the capital market." References are to the much broader "credit markets" although the discussion does develop the idea of the short-term and long-term segments of the credit market. In view of the widespread use of the terms "money" and "capital" markets it would have seemed desirable to discuss them as components of the much broader credit market.

The departure from practice is also to be found in the use of "free reserves." This term is used on page 187 to mean the gold certificate reserves of the Federal Reserve System in excess of the 25 per cent requirement. In other places (pp. 166 and 176, for example) such excess reserves are referred to as "free" gold and "free" gold reserves. On page 210, the term "net free reserves" is used in its usual connotation to mean excess reserves of member banks larger than borrowings. While the usage of these terms leaves little doubt as to their meaning, there are advantages to be gained by following, whenever possible, customary practice. The vocabulary of money and banking is sufficiently complex for the beginning student without adding complexity by departing from customary usage.

Basically, however, this volume should accomplish its purpose. It is clearly written, the style is simple, and the illustrations attractive and informative. It should be of considerable help to the beginning student in money and banking or in the principles of economics; to the layman who wants to acquire some insight into the working of our monetary and banking system; and to the young instructor who is in need of supplementary reading material.

C. A. MATTHEWS

University of Florida

Money, Prices, and Policy. By WALTER W. HAINES. New York: McGraw-Hill, 1961. Pp. xvii, 780. \$7.95.

The first half of this book treats money as a means of payment. Most of the second half treats money as a standard of value. The remainder of the book is devoted to the international field.

Seen closer up, the book is subdivided into ten parts: Money and Its Development (functions and evolution of money and origins of modern banking); Commercial Banking (early American banking, national banking system, commercial bank operations, and credit expansion); Central Banking

(Federal Reserve history, operations, and controls, the sources and uses of reserve funds, and the current banking situation); Financial Intermediaries (credit and finance, consumer finance, and business and government credit); Monetary Systems (monetary standards, the U.S. monetary system, and foreign banking systems); Monetary Theory (value of money, the business cycle, theories of the value of money, and transactions and cash balances); National Income Theory (income approach, national income history, role of expectations, flow of funds, and the rate of interest); Monetary Policy (aims, Federal Reserve policy, critiques of the bases and tools of monetary policy, and fiscal policy); International Monetary Relations (payments mechanics, exchange rates, world monetary problems, and international economic co-operation); and Conclusion (the veil of money).

This close-up suggests the comprehensiveness of the work. Noteworthy inclusions are the new (1959) formulation of (Copeland's) Federal Reserve flow-of-funds data, a chapter on the sources and uses of reserve funds, and a 70-page coverage of financial intermediaries, which have become increasingly important. Each chapter is concluded with a selected bibliography and a dozen or so thought-provoking questions ("resembling the real-life questions with which we all wrestle") that cannot be answered merely by turning back a few pages.

The author has developed four themes—history, institutions, theory, and policy—in his examination of monetary policy, public and private. His treatment of these themes is balanced, and his list (p. 561) of desirable economic goals—economic freedom, full employment, a reasonably stable price level, and economic growth—suggests the "liveness" of monetary policy as a field of continuing controversy.

From Say's Law in the first chapter to Pigou's "veil of money" in the last, the book has considerable classroom potential. Many of its 40 chapters are relatively self-contained. As would be expected in a money and banking text, commercial and central banking constitute the core of the book. However, the lucidity and the comprehensive coverage of the work contribute greatly to its value.

For example, national income theory is handled pictorially rather than algebraically—with success. Diagrammatic presentation is effectively used to elucidate intra- and interdistrict clearing (pp. 116-17), Federal Reserve organization and functions (p. 171), supervision of the commercial banking system (p. 223), governmental credit and credit-insurance agencies (p. 287), and the relation between prices and costs (p. 553). Universal credit cards are "caught" (p. 259) under consumer credit. Circuit flow diagrams are frequently employed to clarify concepts (e.g., to show on page 464, *inter alia*, that money creation can counteract a hoarding leakage). The material is up-to-date. Some data are even carried into 1960. A chapter on interest rate theory gives recognition to the recent resurgence of high interest rates.

Haines's work will delight the literary-minded. The writing is succinct, as on page 277: "The over-the-counter market—more accurately designated as an over-the-phone market—has no physical existence." While apparently the

author does not belong to the "do-it-yourself" school of poetry (like, e.g., Boulding), his Shakespearean quotation prefacing each chapter bespeaks his *savoir-faire* at impeccably appropriate poetic selection.

Although this introductory-level textbook will admittedly not excite the academicians over its novelty or profundity, it is a very worthy addition to the money and banking field. Its inclusiveness and its readability make it useful as a reference work as well as a text. Anyone who has read it should understand the role that money plays in a modern economy and its effect on national income and on his own standard of living.

HOWARD S. GORDMAN

Georgia State College

Public Finance; Fiscal Policy

Public Finances: Needs, Sources and Utilization. A Report of the National Bureau of Economic Research, Special Conference Series Vol. 12. Princeton: Princeton University Press, 1961. Pp. xiv, 512. \$10.00.

In organizing this conference the Committee wisely refused to be satisfied with making relatively minor and specific contributions to the already much discussed field of federal, state and local tax problems. Rather, opportunity has been given to several specialists to update their views on the theory and practice of resource allocation in the public sector. Moreover, the generous space given to the commentators has brought fruitful results in exposing the many areas of disagreement in this heterogeneous and specialized field. A wide range of disciplines is represented in these papers, including political science, game theory, welfare economics, the theories of risk, uncertainty, and interest, the study of the social welfare function, location theory, and objectives and techniques of maximization. In the light of the wide range of theory encountered in this volume, the reader may wonder whether Buchanan is correct (p. xii) that "Public Finance seems to be on the threshold of becoming one of the most stimulating fields of inquiry in all of the social sciences," or whether, to the contrary, we are about to witness an acceleration of the dismemberment of an applied field that has gone on for the past twenty-five years as parts of public finance have been more closely integrated into the general body of economic theory.

Despite the wide range of topics covered in this volume, it has a fairly integrated structure. There are two papers on governmental financial needs and resources; three on decision-making problems arising out of our multilevel political structure, together with one on metropolitan finance; three devoted specifically to tax and spending decision-making, with a fourth to the special role played in the budgetary process by the circumstances of the organization of the Department of Defense; and one (by O. H. Brownlee) on user prices vs. taxes, which gains admission to a symposium centered around public spending decisions through its emphasis on the role of pricing of certain government goods and services to induce individuals to reveal their preferences.

The first two papers, one by Colm and Helzner and the other by Netzer, present models of financial needs and resources over the next decade under a variety of different assumptions. Both of these studies in a sense represent progress reports in the course of a continuous process of refinement of data, and of sharpening and reconciliation of assumptions. Their importance lies rather in their contribution to techniques of forecasting than primarily in the value of the actual predictions made. On the latter, note the differences of opinion that arise in probable levels of defense spending (even in the absence of war), and the continual debate over Netzer's view that the elasticity of property tax revenues in terms of GNP is unity. One may be permitted to speculate on what further differences of opinion would have emerged if, instead of four commentators, eight or ten had been found qualified to evaluate this group of papers.

In the second set of papers, Tiebout's is concerned with fiscal decentralization from the point of view of economic efficiency, and is thus a companion piece to that of Musgrave, which considers criteria for central government interference in state finances to take account of differing needs and capacities, willingness to tax, the meeting of minimum programs, and equity considerations with respect to citizens of different states. Tiebout points out that even "pure" public goods, because of spatial considerations, are often more accessible to individual A than to individual B. Thus the problem of optimum size of "precinct" (i.e., production unit) arises, as well as that of taxing to take account of each individual's proportion of the total benefits. After presenting a number of models, Musgrave prefers a plan that makes the subsidy received by a low-capacity, high-need state depend partly on its own tax effort. The third paper in this group, by Labovitz and Ecker-Racz, is a detailed examination of various ways to better the financial position of the states through changes in intergovernmental fiscal relations. A number of widely held tax views are corrected; for example, that removal of tax immunity of federal government property will soon come to the aid of certain hard-pressed communities; and that an increase in the federal estate tax credit would increase the revenues of most of the states. Finally, in this series, the problem of metropolitan finance is comprehensively discussed by Julius Margolis. He addresses himself to the paradox that metropolitan centers enjoy enormous advantages in economic resources and institutions, yet operate so often under conditions of financial crisis. A major difficulty is the inadequacy of the existing forms of urban government to cope with these rapidly developing problems.

Lindblom stresses the incremental nature of decision-making. A series of specific choices is made at the margin, and these choices in part determine the social welfare function. The conclusion is optimistic: that individuals can "often" agree on decisions though they hold conflicting values. "Partisan mutual adjustment" thus can give us a collectively rational policy. Insufficient stress seems to be laid on the facts that many decisions are extremely lumpy because they carry a satellite system of logically necessary corollaries, and that a rational policy progressively created by competing pressure groups may not maximize the long-term welfare of society.

McKean's paper emphasizes the failure of the federal government to evolve an effective program budget. Indicators of performance are needed. More stress should be laid on outputs and less on inputs. Certainly the lack of performance indicators in the broadest sense is precisely what is likely to alarm the citizen who discovers that government investment projects are dollar-evaluated in terms of cost-benefit. As Burkhead comments (p. 359) "project values that are nonmeasurable are relatively neglected."

Enthoven and Rowen stress the inadequacies of the mechanism of choice in defense planning. The never-ending process of bargaining makes efficient choice difficult; but duplication is the price that has to be paid for the reduction of uncertainty. Cogent reasons (partly based on military strategy considerations) are given for rejecting the fixed requirements and priority list approaches to defense budgeting, and for subdividing the defense budget into output categories, so that military output is maximized by trading among inputs.

Eckstein's paper, on the theory of public expenditure, covers a wide range of subjects. Controversy arises over the rate of discount to use in valuing public investment projects. Not only is there a question of whose time preference to use, but (as Hirschleifer comments) the marginal productivity of alternative investments must be taken into account. In any case, planners' discount rates mark the beginning, not the end, of the calculations necessary to select among alternative public and private investment projects. They should serve to introduce rather than to terminate debate on the merits of a proposed project. The Army Corps of Engineers is said to have "all the evidence" to justify going ahead with terminal facilities in the Indiana dunes area. But there is an important kind of evidence that cannot be evaluated in cost-benefit ratios. This is getting lost in the sometimes doubtfully valid specificity of social discount rates and cost-benefit ratios.

KENYON E. POOLE

Northwestern University

Comportements économiques et distorsions fiscales. By JEAN-CLAUDE DISCHAMPS. Paris: Presses Universitaires de France, 1960. Pp. viii, 408. NF 20.

The primary purpose of this study, which is based upon Dischamps' doctoral dissertation at the University of Aix-Marseille, is to analyze the relative economic effects of direct and indirect taxes. The distinction between the two is made by Dischamps on the basis of whether or not the individual can alter his tax burden by varying his rate of consumption. Thus the indirect category includes the spendings tax as well as commodity taxes, which are assumed to be shifted to the consumer. While a real effort is made to be objective, a strong pro-indirect tax bias is evident throughout. The study is made in terms of the two general forms of the taxes rather than specific versions of them, apart from different rate structures. For the most part, partial equilibrium analysis is employed and economic welfare considered in terms of the individual without summation to the group, although summation

cannot always be avoided, and the terminology employed at times strongly suggests measurability of utility.

The work is divided into three major parts. The first reviews concepts and restates what the author calls the classical theorem of the superiority of direct taxes in terms of economic welfare, utilizing both the indifference curve and consumer surplus approaches. Reference is made to various cases in which the theorem is not valid even within its own frame of reference. Part II contains the primary attack on the methodology of the classical theorem, with a restatement of the well-known criticisms on the basis of absence of an initial optimum (the Rolph-Break argument), of possible shifting of an income tax and nonshifting of sales taxes, and of the superiority of additional excise levies if some are already employed (the Davidson argument). Particular stress is placed upon the distorting effects of direct taxes on prices and resource allocation arising out of varying income elasticities for different goods. The whole indifference curve analysis is subjected to strong criticism.

Part III analyzes the relative effects of the two types of taxes on work-leisure ratios, asset holdings, consumption-savings ratios, and risk-taking. For the most part Dischamps merely reviews the literature on these subjects, but he does introduce new insights in some instances. The conclusions are not unexpected; relative effects on work-leisure ratios and asset holdings are not definable while the indirect taxes have less distorting effect on consumption-savings ratios and risk-taking. The over-all conclusion is simply that the dragon is dead—the classical theorem is invalid. He does not claim that he has proven the superiority of indirect taxes.

The volume performs several useful functions. It brings together a review of literature in the field in English, French and Italian to supplement the sparse international cross-fertilization in public finance. At the same time there are significant contributions to the body of analysis. The most significant include the analyses of price-distorting effects of income taxes, the weaknesses of the indifference curve approach in a dynamic world; the relative economic effects of applying excise taxes to goods complementary to work and complementary to leisure; and the relative effects of the two taxes in bringing readjustments in asset holdings, and in consumption-savings ratios via the Pigou effect.

The level of competency is high throughout, although there are occasional lapses, such as confusing the effects of the government expenditures with those of the taxes on a few occasions. Had the author had access to the Musgrave magnum opus when he was writing, he could have made some of the analysis more clear cut and positive. While the presentation is remarkably lucid, it is also unnecessarily repetitive. But the greatest weakness lies in the framework of approach, that of centering attention on the so-called classical theorem of direct tax superiority, which inevitably gives a beating-a-dead-horse tenor to the discussion. The limitations of a general direct-tax-superiority theorem so far as economic distortions are concerned have long been recognized, and Dischamps elevates his destruction of the theorem to unwarranted status.

Furthermore the theorem had relevance only to selective commodity taxes, whereas Dischamps identifies indirect taxes with all consumption levies. Much of his argument is not valid for spendings taxes.

The use of a generalized concept of an indirect tax which includes three rather sharply differentiated forms reduces the over-all usefulness of the study. Dischamps ignores the potentially serious production-distorting effects of many sales taxes on the one hand, and the potential advantages of the spendings tax approach on the other. If attention had been centered on the relative economic effects of expenditure and income-based taxes, the logical framework would have been more satisfactory and the results somewhat more significant. But the volume is nevertheless a valuable contribution to the literature of public finance.

JOHN F. DUE

University of Illinois

Trends in Government Financing. By MORRIS A. COPELAND. National Bureau of Economic Research Study No. 7. Princeton: Princeton University Press, 1961. Pp. xxvi, 210. \$5.00.

Professor Copeland has contributed this volume to the National Bureau's study of the trends and prospects in capital formation and financing. Necessarily the emphasis is more upon financing than upon capital formation since much public financing is not closely related to the construction of physical capital. The author's purpose is not to appraise the wisdom of public borrowing but "... to determine what borrowings and what capital outlays have been and what circumstances have given rise to them ..." (p. 3) and thus to provide some basis for forecasting.

The author develops and emphasizes the concept of net debt, by which he means the excess of gross public debts over intergovernmental debts, "... cash balances and loans and securities held" (p. 4). The increment in this debt is measured by the flow-of-funds (FOF) "nonfinancial debt computation" which is the excess of "nonfinancial uses of funds" over "nonfinancial sources." This concept is a useful one when studying borrowing in the context of economic stabilization, but it requires extensive computations; and for many years in the past the necessary data are not available. Lacking such data, the author sometimes resorts to heroic assumptions which might be questioned. Further, the author makes frequent use of the concepts of gross debt, gross debt less sinking fund assets, and net debt in his own particular sense, and it is not always possible to be sure which meaning is intended.

With respect to state and local borrowing, the major findings are: (1) most borrowing has been for the construction of capital assets, the principal exception being the payment of veterans' benefits; (2) larger communities tend to have larger per capita debts than smaller ones, although this difference is tending to disappear with the spread of urbanization; (3) regional differences in debts seem to be associated with differences in per capita incomes, but this difference, too, is narrowing; (4) the upward trend in per capita debts from 1890 to 1930 was interrupted by the depression and the second world war; it is not clear whether it has been resumed; (5) much of the borrowing in the

past was for functions which are now being financed in part by federal grants. No attempt was made to correlate per capita debts with per capita incomes in communities of different size. The importance of the increase in debts since the second world war was greatly reduced by the concept of net debt used and by the fact that the study did not extend beyond 1954; gross debts have increased by about 80 per cent since 1954.

National borrowing has been mainly for wars and countercyclical expenditures, with war borrowing heavily predominant. The author ascribes the amount of war borrowing to the fact that Congress appropriates money much more liberally and more readily than it levies taxes, although the experience in the two world wars was much better than the Civil War record. In view of modern technology and the great cost of any future war the author understandably refrains from any specific prediction about future war borrowing.

The discussion of debt reduction is restricted entirely to the federal debt. The author points out that when in the past the debt has been reduced it has been not primarily because of any plan or design, but because expenditures declined more rapidly than taxes were reduced. This has not happened since the second world war and the author does not think that it is likely to happen in the future, but it "... could conceivably happen again" (p. 162). While there is some discussion of monetary policy, the author does not consider the role the federal debt plays in providing liquidity for the economy.

For the future the author sees little chance of debt reduction, and he anticipates substantial federal borrowing in periods of recession or depression, and possibly some for foreign aid. Total borrowing may be held down somewhat to the extent that state and local functions are financed by federal grants.

The author has assembled and surveyed a great deal of material—so much that he has not been able to integrate it well nor to study it in depth. The book is singularly tedious and difficult to read because the author changes subjects frequently, introduces into the text much statistical and other factual material, some of which is not relevant to the discussion, and frequently repeats or paraphrases thoughts or concepts.

B. U. RATCHFORD

Federal Reserve Bank of Richmond

Fiscal Policy for Stable Growth. By CHALLIS A. HALL, JR. New York: Holt, Rinehart and Winston, Inc., 1960. Pp. vii, 311. \$5.00.

Fifteen years or so after the Keynesian theory of income determination found its way into the better textbooks, it is still tempting to base even intermediate exposition of the pure macro-theory of fiscal policy on the truncated Keynesian spending model of statical flow-relations, in which all endogenous spending depends on current income, and stocks of money, or of anything else, play no role. Professor Hall's book is designed to counter that temptation. Using "elementary methods," he sets forth the fiscal and monetary policy implications of maintaining full employment, a target rate of growth, and a stable price level in the context of a full-blown macro-model in which asset-choice and monetary factors are at the center of things. The

model is Keynes-Tobin: private saving is a function of disposable income; labor supply is infinitely elastic with respect to the money wage rate over a broad range up to full employment; liquidity preference and marginal-efficiency are replaced by an explicit theory of asset choice under uncertainty. While actual investment adjusts instantaneously to *ex ante* saving, desired investment is a function of risk-averting portfolio decisions which involve striking a balance between holdings of goods (of one kind: "capital"), consols, and money, according to tastes and the expected mean and variance of rates of return on capital and bonds.

The broad structure of the book is admirable. A statement of scope and purpose is followed by two chapters which explain the structural relations of the model and demonstrate the qualitative workings of a truncated version under stationary conditions, with a given fiscal structure. After a one-chapter exploration of the responses of the truncated system to changes in yield-expectations and technology, there follow the three central chapters on policy: one on variations in government spending and the total tax take in relation to Treasury and central-bank monetary operations; and two on the consequences for saving and investment of variations in the structure of taxes. Special attention is given to various depreciation devices, to tax credits for investment, to loss offsets, and to the differential effects of taxes levied on individual incomes, on corporate profits, and on consumer sales. The book concludes with chapters on fiscal policy and cost inflation, on "fiscal policy for cyclical and erratic growth disturbance," on automatic stabilizers, and, last, a summary statement on fiscal and monetary strategy.

The model which underlies the analysis is well chosen both for its intrinsic interest and for the development of Hall's central theme—the interaction between once-for-all changes in flow relations and cumulative changes in stocks. In the truncated, one-period version, with given supply schedule of labor, saving function (private), fiscal structure, government interest payments, and stocks of capital and of nominal money, the equilibrium level of the price of goods and of employment (and of everything else) is determined by the double requirement that (1) output-price times the marginal physical product of labor, as determined through a homogeneous production function of first degree, equal the money wage rate, i.e., the supply-price of labor ["labor market balance"]; (2) that everyone should be content with his holdings of capital, bonds, and real balances ["portfolio balance"]. The second condition implies that the yield on capital, as determined through the production function by the ratio of the given stock of capital to employed labor—the yield which assures "commodity balance"—be consistent with "asset balance," i.e., cause people to want to maintain unchanged their holdings of capital and monetary assets; and—a subsidiary condition—that the interest rate cause people to be satisfied with the associated value of consols and with the real value of their holdings of cash less what is earmarked for transaction purposes (a function of output).

The formal analysis consists in tracing the consequences of growing supplies of labor and capital, of shifts in the behavior relations, and of changes

n the fiscal and monetary structure, for the four balance-relations, with emphasis on the various combinations of fiscal and monetary measures which will sustain full employment and stable prices and a given investment-consumption mix.

Excellent in purpose and organization in-the-large, firmly based on a well-chosen model, and generally sensible in its policy conclusions, the book is, apart from quibbles about detail, open to one serious criticism. It is not easy to judge such matters, but I would suspect that for an intermediate text it is rather too hard going—and unnecessarily so. With assumptions, theorems, conjectures, sketches of proofs, examples, and dicta—not always labeled for what they are—all mixed up together, following the natural, entirely logical sequence of Hall's narrative, it is not likely to be easy for anyone who is not familiar with the model to get a commanding grasp of its workings, to develop a sense for the critical assumptions. To be sure, to have used a simpler model would have violated Hall's purposes. But especially in the exposition of the theory of asset choice in Chapter 2, and of the workings of the truncated model in Chapter 3, it might have been better to adopt a more explicitly structured, postulational mode of presentation in-the-small—to organize the discussion around the central theorems, each with its associated and clearly labeled list of special assumptions and sketches of proofs. (I should admit a bias in favor of theory textbooks which, for any given level of depth and rigor, are designed to spoon-feed. For a persistent student who is stimulated by the difficulty of the narrative to work out the model for himself as he goes along, Hall's presentation may be just right.)

Two further comments. (1) I would have thought it important to emphasize—more frequently and more sharply than does Hall—that choice among alternative fiscal and monetary policies should be made in part in terms of their effects on the allocation of resources as between public and private uses and on the distribution of income. (2) This is a book on theory, in the physical science sense of theory. It derives the implications of a model with little explicit reference to its factual, econometric groundwork. Given the scale of the book, I do not think this a blemish, but in a self-contained course on stabilization policy it might be well to supplement the text with some discussion of our state of knowledge about the empirical validity of the critical functions. In particular, since the natural (though not strictly implied) bias of the model is to attribute considerable potency to monetary policy, it would be appropriate to emphasize what we know and don't know about the responsiveness of portfolio and spending decisions to variations in yield.

FRANCIS M. BATOR

*Massachusetts Institute of Technology and
The RAND Corporation*

The Public Finances: An Introductory Textbook. By JAMES M. BUCHANAN. Homewood, Illinois: Richard D. Irwin, Inc., 1960. Pp. xvi, 553. \$7.50.

Those who have read the contributions of Professor Buchanan to the literature of public finance over the past dozen years will not be surprised to find

that his textbook, *The Public Finances*, departs considerably from the traditional mold. Buchanan has written a text in which he presents primarily an elementary treatment of the theory of public finance. In it the student will discover the relevance for decision-making in the public sector of the "new" welfare economics, and will find an emphasis on the development and application of efficiency criteria that goes far beyond that found in other textbooks in this field. On the other hand, the book contains only a minimal amount of quantitative information. Institutional and historical aspects of the subject matter are generally dealt with rather briefly or not at all.

The Public Finances is divided into nine parts which deal, in turn, with the nature of the public sector of the economy, the impact of the budget on the economy as a whole, socio-economic goals and the fiscal system, federal expenditures, federal taxation, the national debt, state and local finance, intergovernmental fiscal relations, and user-charge financing of public undertakings. In each of these parts conceptual issues are dealt with in very readable and provocative fashion. One might complain that Buchanan tends to avoid any hesitancy or reluctance to present his own unequivocally positivist point of view, but for some readers this will undoubtedly prove to be an attractive aspect of the book. However, for some tastes, including that of this reviewer, too often he either fails to mention opposing points of view or brushes them aside all too easily. This would be less objectionable if the student were apprised of the existence of substantial contributions to the literature of those who might disagree with Buchanan. But there are virtually no footnotes in the book and bibliographical references are limited to Musgrave's *Theory of Public Finance*, Buchanan's own publications, and about a dozen and a half other items.

For use by undergraduate students in public finance the volume is most valuable for its treatment of such subjects as the theory of public expenditures, efficiency criteria, the theory of public debt, and conceptual issues in intergovernmental fiscal relations. Buchanan's view on the efficiency criterion in welfare economics is highly doctrinaire—an efficient position "is defined as a position from which no change can be made without making someone worse off" (p. 130). And efficiency in the public sector is achieved when each individual is required to pay a "tax price" for each unit of a public service that is equal to the marginal benefit he receives (p. 171). All of this is fine, of course, if the conditions of perfect competition prevail everywhere. But even if they do, there still remains the problem of choosing between two "best" positions on a Paretian frontier, a problem that is not raised by the author. One has the feeling too that the problem of getting people to reveal their preferences, or of devising a scheme for making the individualistic benefit approach to the theory of public economy embraced by Buchanan operational, is understated, if not badly slighted.

In evaluating those portions of the book that deal with structural problems it is, perhaps, necessary to keep in mind the space limitations imposed upon the textbook author. Nevertheless, it must be admitted that it is simply not possible to deal adequately with the federal tax structure in 75 pages. The at-

tempt to do so forces the author to dispense with the subject of exemptions under the personal income tax in less than half a page and the standard and itemized deductions in three pages. "Erosion" of the tax base is an issue that is simply not discussed.

At several points Buchanan generalizes from aggregate data in a manner that is patently not justified by the facts. Having pointed out, for example, that local and state income taxes yield only 1 and 10 per cent, respectively, of local and state tax receipts, he concludes that "the income tax . . . is of limited productivity as a revenue source at the state-local level" (p. 483). The fact is, however, that several major cities now derive as much or more revenue from income than from property taxes and state income taxes are very important sources of revenue for those states that choose to exploit them. Thus in 1959 Delaware, Massachusetts, New York, Oregon, and Wisconsin all realized one-third or more of their total tax receipts from the individual income tax alone.¹ All of this appears to be a part of the more general set of arguments within which Buchanan develops policy conclusions that favor state reliance upon sales rather than income taxation. With respect to the alleged regressivity of the former, it is concluded that "It is best to eliminate all reference to the advantages or disadvantages of individual taxes on the grounds of regressivity or progressiveness" (p. 434).

The Public Finances is not, in my judgment, a "textbook" in the usual sense. It certainly cannot or should not be used in any course without very substantial supplementation designed to fill its institutional, descriptive, and historical gaps, and to present to the student alternative points of view on issues in theory and policy. It is, on the other hand, highly provocative and exceedingly readable. Those who do not use it as a text for their courses will want to ask their students to read substantial portions of it. Those who do select it for text purposes should find their students rising frequently to Buchanan's bait. His system of thought produces a sequence of policy conclusions or implications that will endear him to the "conservative" and challenge the "liberal."

HARVEY E. BRAZER

The University of Michigan

International Economics

Flexible Exchange Rates—Theory and Controversy. By EGON SOHMEN.
Chicago: University of Chicago Press, 1961. Pp. xi, 173. \$5.00.

The title of this short study has been very appropriately chosen. The inclusion of the word "controversy" accurately portrays its true nature and the spirit which animated the author in writing it. Sohmen is completely engrossed in the controversy involving the question of fixed versus flexible exchange rates. But he is not an impartial reporter; he is a strong believer in the

¹ U.S. Department of Commerce, Bureau of the Census, *Compendium of State Government Finances, 1959* (Washington, 1960), p. 11.

usefulness of flexible exchange rates and is definitely unwilling to compromise his convictions.

Sohmen has scanned the literature with much assiduity (witness his 9 pages of bibliography, listing books in English, French, and German) and he has accumulated a large variety of controversial aspects of the subject. Alas, he did not need to go far, inasmuch as this particular issue has always been and still is a notorious bone of contention among theoretical economists. On the other hand, this study appears a few years too late to be popular. In the early 1950's, when the first disenchantment with the International Monetary Fund occurred, the issue of flexibility was in high vogue.

What are Sohmen's claims for the desirability of flexible exchanges and what is his approach? Let us begin with the second part of this question. He quickly disposes of the "elasticity pessimism" argument in Chapter 1 and turns immediately to capital movements, speculation, and forward exchange markets (Chs. 2-4). This is followed by a discussion of income and employment under flexible exchange rates (Ch. 5) and a description of the effects of devaluation (Ch. 6). The final chapter summarizes more or less the case against pegged exchange rates. The author also offers a few policy recommendations. His main recommendation appears to be that all countries should emulate the recent Canadian experience with flexibility. This means, in the words of the author, that the authorities should "remain almost completely aloof from the exchange markets" (p. 136).

Let us turn to some of the controversies and show what position Sohmen takes and why he considers flexibility superior to the pegging of the rates. For example, while discussing the alleged low elasticities of demand in Chapter 1, he disagrees with those economists who fear that low demand elasticities in the short run might make the foreign exchange markets highly unstable. He points out that this view tends, first of all, to neglect both arbitration and speculation in foreign exchange and, second, to imply that only an unstable equilibrium might exist. This leads him to the theoretical discussion of the problem of a stable equilibrium and his recent controversy on this particular issue with Bhagwati and Johnson. Sohmen's position is that, in the real world, at least one exchange rate that guarantees a statically stable equilibrium in the foreign exchange market must exist at every instance (p. 7).

Sohmen stresses that neither theory nor practice supports the view advanced by the opponents of flexible exchange rates that capital transfers are erratic when exchange rates are not pegged. He disagrees with the thesis advanced by Laursen and Metzler and others that flexible rates necessarily require tight controls on capital movements and prohibition of speculation, on the ground that speculative activity does accentuate the instability of the rates if they are not pegged. In his view "complete freedom of capital movements is a *conditio sine qua non* for the success of a system of freely fluctuating exchange rates" (p. 24), and he cites Nurkse, Friedman, Meade, and others in support of his argument that speculation has more often been stabilizing than destabilizing (p. 52). According to him, speculative activity is bound to ag-

gravate the disequilibrium whenever the pegged rate is even slightly out of line; but the same, he maintains, would not happen under flexible exchanges (p. 118). He uses the Canadian dollar as a case demonstrating the validity of this argument, by indicating that the maximum amplitude of fluctuation of that currency has, since 1952, never been above 5 per cent.

One should perhaps point out in this connection that the author considers the gold standard as "the perfect example for the effectiveness of stabilizing speculation," and one must admit that Sohmen is entitled to his opinion if he wishes to consider the market rate under the gold standard as "freely fluctuating between the gold point limits" (p. 63). Despite this view, Sohmen does not seem to like the gold standard. While agreeing with Keynes (*A Treatise on Money*) that the widening of the limits between the gold points was highly desirable, the author argues against the rigidity of these limits. Under fluctuating exchanges, he underscores, "rigid boundaries for exchange rate movements exist neither for the spot nor for the forward rate" (p. 79).

One of the most controversial issues involving flexible exchange rates is whether or not they contribute to inflation. Sohmen clashes head on with Harrod, holding that there is no basis for fears that devaluation of the currencies of countries taking the step to universal flexible exchange rates will cause inflation. He strongly disagrees with those economists who maintain that "direct controls are often the only realistic choice because devaluation is an inflationary factor that would defeat its own purpose before too long" (p. 109). And, there is unquestionably much validity in his counterargument that it is the tightening of import controls as a substitute for devaluation that, leading to a serious misallocation of resources, aggravates an existing inflation.

These are a few selections from a larger list of controversies which are discussed in this study. Throughout, Sohmen has written a strong defense of his arguments. His main adversaries are, by his own admission, the neo-Keynesians, the enemies of free trade, and all those who seem to favor the "adjustable peg" so much identified nowadays with the operations of the IMF. Since Sohmen writes with such intensity, readers are likely to agree or disagree with equal intensity, especially where policy questions are involved. Statements such as the following: "The disturbances caused by the discrete changes characteristic of the 'adjustable peg' are considerably more serious than those provoked by the smooth, day-to-day fluctuations in a system of fluctuating rates" (p. 119) fall into this category.

While this is not a book one would take for leisurely reading in the garden, the analytical material should not cause too much difficulty, even for those who are not completely *au courant* with current theory of international trade. This study should be particularly useful to graduate students concentrating in the fields of international trade and finance, but others will find here many interesting ideas and comments on this highly debatable topic.

STEPHEN SPIEGELGLAS

Boston University

British Monetary Policy and the Balance of Payments, 1951-1957. By PETER B. KENEN. Cambridge: Harvard University Press, 1960. Pp. xiv, 325. \$7.50.

Kenen's study, originally a Ph.D. dissertation at Harvard University, is both an account of Britain's monetary history between 1951 and 1957 and an analysis of the effectiveness of monetary policy in rectifying a balance-of-payments disequilibrium. Because of its thoroughness and assiduousness to detail, this essay can be recommended to students of monetary policy as well as to nonspecialists wishing an introduction to the issues behind the "great debate" which continues to rage in Britain concerning the need for monetary and banking reform.

My major reservation relates to Kenen's analysis of the impact of monetary policy on Britain's balance of payments and particularly to his conclusion that events during the period examined demonstrate the ineffectualness of monetary policy. In what follows, I shall adopt Kenen's procedure of discussing separately the direct and indirect effects of monetary policy.

Although Kenen notes several direct effects, the main part of his analysis is devoted to an examination of the effectiveness of differential interest rates in attracting short-term funds from abroad. The burden of his argument is that interest arbitrage had little effect on Britain's dollar reserves. In support of this hypothesis, Kenen presents the by now classical description of interest arbitrage operations. Since interest arbitrageurs cover their operations by selling forward sterling at the time they purchase spot sterling, there is a tendency for forward sterling to fall to a discount thus eliminating the incentive for further short-term flows in response to interest-rate differentials. An examination of spot and forward sterling rates between 1953 and 1955 when funds flowed to London reveals, however, that the discount on forward sterling did not offset the interest rate differential. Kenen concludes that the inflow of funds during this period must be attributed to speculative rather than to arbitrage operations and that "on balance . . . interest rate changes do not greatly strengthen the gold and dollar reserves by attracting dollar balances to London" (p. 148).

This conclusion is clearly unwarranted. Quite aside from Spraos' observation that effects commonly attributed to speculation are in fact the result of arbitrage operations,¹ the only valid conclusion one can draw from this experience is that some portion of the inflow of funds to London may have been due to speculation. Kenen's analysis cannot, in the nature of the case, refute Reading's findings that a substantial inflow of funds occurred during this period in response to interest-rate differentials.² Moreover, in view of Einzig's recent investigations which led him to conclude that in the postwar period short-term flows occurred in response to margins considerably lower than the .5 per cent which was deemed necessary in the interwar period,³ it is inconceiv-

¹ J. Spraos, "Speculation, Arbitrage and Sterling," *Econ. Jour.*, Mar. 1959, 69, 1-21.

² B. Reading, "The Forward Pound, 1951-1959," *Econ. Jour.*, June 1960, 70, 304-19.

³ P. Einzig, "Some Recent Changes in Forward Exchange Practices," *Econ. Jour.*, Sept. 1960, 70, 485-95.

able that a significant differential in interest rates, such as existed between 1953 and 1955, could fail to attract short-term capital.

Turning to the indirect effects of monetary policy Kenen concludes, on the basis of an analysis of the composition of demand, that the restrictive policy of the post-1951 period had little impact. The basis for this conclusion is that the level of capital formation—the component of expenditure allegedly most responsive to a restrictive monetary policy—seems hardly to have been affected by the tight money policy. The diversion of resources from the domestic market to exports which did in fact occur during this period is attributed to the decline in consumption expenditures which resulted from the increase in purchase taxes and the regulation of instalment credit. I remain unconvinced. Kenen completely ignores the possibility that the nonmonetary restraints on consumption might have relieved the pressure on resources sufficiently to permit the level of capital formation to be maintained. The crucial question, in other words, is whether a restrictive monetary policy would have had adverse effects on the level of capital formation had alternative policies aimed at reducing consumption expenditures not been simultaneously introduced. I fully agree with Kenen, however, that the restrictive monetary policy would have been more potent—and possibly more injurious to Britain's welfare—had it affected the availability as well as the cost of loanable funds.

Despite my reservations, I must emphasize that this is a book well worth studying. Among its many virtues, it is extraordinarily well written.

ELLIOT ZUPNICK

The City College of New York

Local Impact of Foreign Trade, a Study in Methods of Local Economic Accounting. A Special Project Committee Statement and a Staff Report by WERNER HOCHWALD, HERBERT E. STRINER and SIDNEY SONENBLUM. Washington: National Planning Association, 1960. Pp. xviii, 213. \$7.00; five mimeographed technical supplements available to purchasers at \$1.50 a set.

Earlier studies indicate that indirect foreign trade effects of which the community is unaware may be more important than the direct effects. Where the impact of import competition is concentrated, while production for export or dependence on complementary imports is widely diffused, a local community is likely to be more aware of the dangers than of the benefits of foreign trade. Previous studies have attempted to draw a more balanced picture. Their trouble has been that the method employed could show only some of the indirect effects. Earlier attempts to deal with the local impact have either (a) allocated imports and exports to regions on a basis of their industrial structure, or (b) inquired of local firms as to their dependence on export markets and the effect of competitive imports on local production.

Drawing heavily on previous studies, the present work employs the framework of local accounts to carry the investigation further. Pilot studies present essentially a two-region model, showing interindustry transactions within

a local community, and between the community and the rest of the world. The three local studies are not entirely comparable, but vary as to the amount of sector detail and the degree to which primary local data were used. In each case, distribution channels were by-passed on the ground that the trade sector of one community is much like that of another.

The most comprehensive table is for Kalamazoo, a diversified inland community of medium size. Considerable detail is also provided for Mobile, Alabama, a seaport with obvious foreign trade interest. In the case of Gloversville, New York, which is essentially a one-industry town, interindustry relations seemed less significant.

The local accounts survey data of the present study provide input coefficients for 1954 (or 1951), which differ widely from those of the national interindustry accounts of 1947. While part of the discrepancy is clearly explained by the lapse of time, and part is doubtless due to the difference of product-mix between local and national industries, it is impossible to determine how much of the disparity is real—that is, a result of different resource endowments, management controls and “import” costs.

Almost 4 per cent of Kalamazoo's local net income can be attributed to foreign trade, although less than 1 per cent of its total production was exported directly to foreign countries. The less apparent effects include (1) indirect exports (via national industries) which were almost equal to direct exports, and (2) complementary effects, that is, local goods and services sold for use in producing direct and indirect exports.

Kalamazoo's direct and indirect expenditures for imports are an offset to income derived from exports. Although 60 per cent of household incomes were spent outside the community, less than 1 per cent were for goods imported directly by local dealers. Doubtless a considerably larger percentage, including materials embodied in finished products, was imported indirectly. In respect of business supplies, 5 per cent were imported directly from abroad, while 1-3 per cent originated abroad and were imported indirectly by Kalamazoo.

Mobile's exports accounted for 12 per cent of net income in 1951. Direct exports (60 per cent of which were port services) accounted for 3 per cent of local gross output. In addition, a port community earns income from servicing the trade of outsiders. As a source of net household income, this indirect export was almost twice as important as all other indirect exports of Mobile business firms.

In Mobile about 2 per cent of outside business supplies represent direct imports from abroad, and an additional 1-2 per cent were indirectly of foreign origin. Although there is no reason why a local community's foreign trade should balance, it is essential that some U.S. communities should import in order for Mobile to derive 12 per cent of its income from exports. Kalamazoo's relatively larger dependence on imports is due to the pulp supplied by Canada for its paper mills.

The Gloversville reports show why it was not possible to measure precisely

the injury from competitive imports. Actual injury depends on the response to competition, and imports are only one of many determinates of changes in local production. While a complete embargo on the nation's imports of leather gloves might, conceivably, increase local production by as much as 15 per cent, this assumes that Gloversville products would completely replace imports. Where the benefits of lower costs are spread widely over the national market, local surveys can do little to measure these effects, which are the essence of the gains from trade. The effect of imports appears significant in local surveys only if the impact on the relative position of local industry in the national market is sufficiently concentrated. Thus, imports are beneficial to the paper industry in Kalamazoo, and to the alumina industry in Mobile, but harmful to Gloversville.

The local accounts approach can measure with fair precision only three of five indirect foreign trade effects. These are: (1) the goods and services bought from other sectors of the local economy by local exporters—both direct and indirect; (2) the local supplies sold to export-producing firms elsewhere in the nation, and (3) the goods and services bought outside the community which incorporate supplies of foreign origin. The two effects which elude local accounts analysis are (1) the dynamic impact of imports on local costs and markets, and (2) the effect of changes in national income associated with foreign trade.

Local accounts show explicitly how the community's income is determined by combining its own resources with complementary "imports" from outside the region. The findings indicate that a substantial part of local income is derived from local transactions which are induced by sales outside the community. In each of the three communities, the trade and service sectors were important direct "exporters" to the outside world, although these transactions were often regarded as determined mainly by sales of other industries.

That a community's dependence on foreign trade is likely to be underestimated because of failure to appreciate the contribution of indirect exports to income, is amply demonstrated. Complementary imports benefit a local community, while the substitute effect of competitive imports is regarded as an offset to local income from exports. Thus, the attempt to redress neglect of indirect exports may load the dice in favor of foreign trade—from a national point of view—since one community's competitive imports are complementary to another's industry. In any event, there are serious difficulties, as the study indicates, in balancing the gains and losses from foreign trade to a local community.

Reporting a study of this sort is a formidable problem. Assumptions and limitations are clearly stated. The analysis and findings are presented in a series of rounds of increasing detail and complexity. As a result, the book is excessively repetitive.

Although the initial purpose was to learn more about the local impact of foreign trade, the techniques developed in these studies are useful for meas-

uring the impact of all trade on local communities and are helpful for local business planning. The most valuable result of the study may well lie in the encouragement it gives local communities to develop accounts showing the relationships between local industry and national markets.

DON D. HUMPHREY

Fletcher School of Law and Diplomacy

Het economische Wereldbestel. (The Economic World Order.) By F. HARTOG. Bussum: G.J.A. Ruys Uitgeversmaatschappij, 1960. Pp. xi, 216.

This book is a sort of Dutch counterpart of A. J. Brown's *Introduction to the World Economy*. (See this *Review*, March 1961.) Professor Hartog, too, sketches the principal features of the world economy and examines them in the light of economic theory. Though this exercise might lead some authors to suggest modifications in theory, Hartog does not. In an admirably straightforward statement in the foreword, he excludes this as an objective of this book.

Hartog, with ample warning that some exaggeration is involved, considers the nineteenth century as a period during which the world economy grew and developed in a primarily unregulated, spontaneous manner. During the twentieth century, by contrast, the world economy has been subjected to the conscious organizing efforts of governments. Trade and payments agreements and the formation of supranational organizations, for example, characterize these efforts.

To acquire a proper understanding of the present world economy calls for a systematic survey of its principal features. For Hartog, this must include a statistical portrait of world trade, some explanation of why it became what it is, an examination of trade and payments policies including those designed to further economic integration, a study of some of the international economic problems such as convertibility, business fluctuations, the peculiar problems of countries producing primary commodities and, of course, economic development.

In a lively, unavoidably superficial way Hartog successfully accomplishes his self-imposed task. He writes about a really startling number of problems. His range of discussion of policy matters is wide. He describes important institutional arrangements. The principal features of the theory of international trade are duly examined in fairly elementary fashion.

Had Hartog not clearly warned the reader what to expect of this book, a critic could justifiably have complained about its lack of depth. However, this is not a valid criticism of what Hartog set out to do. Under these circumstances and in the absence of any "howlers" to report, what can a reviewer say? For the professional economist, the book is not an interesting one. Perhaps the intelligent layman or the advanced student seeking a brief review of international economics will find it useful.

In fairness to the author, perhaps a professor-economist is not a proper judge of this work. This one feels like a man who is told what the qualities of

a good onion are, who is then given an onion and who subsequently finds that it fully satisfies the tests for good onions. Unfortunately, the man does not like onions.

WYTZE GORTER

University of California, Los Angeles

Business Finance; Investment and Security Markets; Insurance

Information and Investment: A Study in the Working of the Competitive Economy. By G. B. RICHARDSON. New York and London: Oxford University Press, 1960. Pp. 226. \$3.40; 21s.

Richardson is concerned with the conflict between the desirability of non-collusive, atomistic behavior among economic enterprises to insure the operation of market discipline, incentives, and "natural selection," and the desirability of pooling information about plans and decisions to avoid the social costs of wasteful investment allocation and uncertainty. It is his contention that the theory of competitive behavior has given too little attention to a consideration of the kinds and amount of information that must be available to decision-makers—particularly with respect to the investment decision—in order that a competitive economy should approach the traditional welfare norm.

Part I is essentially a critique of the theory of perfect competition along this line. In Part II Richardson considers at some length the ways in which information of various kinds might be available to entrepreneurs in competitive markets, and the importance of market imperfections in facilitating rational investment decisions. He concludes, however, that even imperfect competition will leave a residual information gap with considerable accompanying uncertainty. Part III consequently explores the response of entrepreneurs to this uncertainty, and the implications for social welfare.

The method of the book is essentially armchair reasoning, with only occasional references to empirical studies. Yet the argument has a realistic flavor, owing perhaps to the practical importance of the problem, as well as to the author's matter-of-fact approach to economic theory.

Readers may find the concluding section of the volume disappointing in the light of the earlier bold statements about the omissions of conventional theory. After a somewhat leisurely early pace the author rushes, in the concluding pages, to a breathless photo-finish between centralized decision-making and collective liability, on the one hand, and decentralization and individual liability, on the other. The case for the latter, which had been ridled throughout much of the volume, is rescued at the very end by invoking Mill's famous essay "On Liberty." But the race is a very close one:

Without some measures of planning and co-operation, whether public or private, harmony between competitive or complementary investment decisions may not be achieved, market uncertainty may not be brought

within tolerable limits and the risks of investment may present too great a deterrent to individual firms. Without some degree of competition, on the other hand, it may be difficult for monopolistic exploitation to be checked, for the authority to allocate resources to pass to those most fitted to exercise it, for diversity to be preserved and for the springs of individual energy and initiative, on which all economic progress must ultimately depend, to be kept unchoked. (P. 222.)

Consequently, the task is "to seek the best compromise"; and this leaves the whole question about where it has always been.

Nevertheless, there are provocative ideas in this book. There is, for example, his argument in Chapter 8 that a preference for more certainty need not depend on any inherent conservative bias against risk, or on diminishing marginal utility of income, but simply on the technical advantage of choosing when there is greater assurance of the outcome (or on the lower cost of providing for "adaptability" to meet the risk of the adverse outcomes). Ordinarily, the discussion of risk aversion tacitly assumes that all opportunities for reducing uncertainty have been exhausted, and that there is a choice between two or more alternatives with particular values and coefficients of uncertainty. Richardson, instead, is concerned with the costs and gains from reducing uncertainty through improving information, a problem which he (probably correctly) contends has been given far too little attention.

Again, in the same chapter, he links liquidity preference to a desire for less uncertainty based on diminishing marginal efficiency of liquid resources in avoiding costs of miscalculation, rather than on diminishing marginal utility of the income so affected.

Richardson analyzes consumer attitudes toward uncertainty in analogous fashion. Assuming a linear relationship between income and "maximum" utility, where the latter is defined to be that utility resulting from *optimal* adjustment to a change in income, a preference for less uncertainty is seen to depend on smaller "dislocation effects" associated with the *imperfect* adjustments consumers will make to unexpected changes in income, or on the smaller provision for adaptability required to meet this risk. Thus Richardson is able to assume a bias against uncertainty while remaining agnostic on the question of the income-utility function.

But the large questions remain. What kinds of institutional arrangements can secure the "best compromise" between coordination and competition? And in what circumstances should either be given more weight in arriving at a compromise? While Richardson makes no attempt to answer these questions, his book has the merit of suggesting an analytical approach to their study. Is, for example, competition less important, and coordination more important, in the context of the development process in the underdeveloped regions as compared to the developed regions? This volume may help us answer questions of this kind.

JOHN H. POWER

Williams College

Capital in Manufacturing and Mining: Its Formation and Financing. By DANIEL CREAMER, SERGEI P. DOBROVOLSKY and ISRAEL BORENSTEIN. New York: Princeton University Press, for National Bureau of Economic Research, 1960. Pp. liv, 344.

This is the fifth monograph in the National Bureau of Economic Research series on trends and prospects in capital formation and financing initiated in 1950. In conformity with the preceding volumes the empirical sections are introduced and summarized by Simon Kuznets. However, there is a difference which makes this volume unique among National Bureau publications—certainly in this series. In Kuznets own words (p. xxvi), “this discussion goes beyond a summary of empirical findings. It tries to sketch out some explanatory hypotheses, and concludes with comments on the problems of using the findings for analyzing the prospects of capital formation and financing in the country.” While short-term movements receive some attention, the primary emphasis throughout the study is on long-term or secular movements.

In Part I, Creamer and Borenstein have integrated and up-dated to 1953 their earlier independent studies of capital and output in manufacturing and mining.¹ The extension of the data to 1953 does not alter their main findings of a rising trend in capital-output ratios in both manufacturing and mining between 1870 and 1919 and a declining trend since that time up to 1953. These trends are observable not only for the two groups of industries in the aggregate but are equally discernible within different industrial branches and different subgroups of capital, i.e., fixed and working.

In explanation of these observed trends in the capital-output ratios Kuznets suggests that there is an “industry’s life cycle of capital-output ratios”: that the “ratio-raising factors,” led by technological and other innovations, dominate in the earlier phases of a modern industry’s vigorous growth whereas economic incentives (ratio-depressing factors) reverse the trend as the industry reaches maturity. The implied positive correlation between an industry’s rate of growth and its capital-output ratio is higher for fixed capital than for working capital.

Part II presents more original findings by Dobrovolsky (assisted by Martin Berstein) on long-term trends in capital financing. Dobrovolsky’s earlier work on corporate income retention² has been extended to include more current data and a completely new treatment of external (debt and equity) financing. The authors are fully cognizant of the limitations of their data which they make explicit in the text and in the appendix. Most of the basic data on financing is only available for corporations, with short-term financing data only available for a sample of large corporations. Because of the

¹ Daniel Creamer, *Capital and Output Trends in Manufacturing Industries, 1880-1948*, National Bureau of Economic Research Occas. Paper 41 (1954).

Israel Borenstein, *Capital and Output Trends in Mining Industries*, National Bureau of Economic Research Occas. Paper 45 (1954).

² Sergei P. Dobrovolsky, *Corporate Income Retention, 1915-43*, National Bureau of Economic Research. New York 1951.

dominance of the corporation in manufacturing and mining this is probably not too serious a limitation.

Dobrovolsky finds that internal funds represent a much greater proportion of total new financing in comparison to external funds in both manufacturing and mining. There apparently is no clear secular variation in this ratio over the period of study, 1900-1953. There is systematic short-term variation, with external funds becoming relatively more important in periods of rapid asset expansion.

Low bond yields, the deductibility of interest charges in computing income taxes, and certain other factors are used to explain the increasing importance of new bond issues relative to equity financing in the period since the second world war. This section also includes an informative discussion of two major developments in long-term financing—private placement of corporate securities and term lending by commercial banks.

Based on his previous life-cycle hypothesis for explaining long-term trends in capital-output ratios Kuznets develops simply but profoundly a model to explain the structure of financing as described by Dobrovolsky. The essentials of this model are summarized best in the author's own words (p. xlvi):

A difference between the average and marginal capital-output ratios, which means movements over time in the average, will affect the share of internal funds, because the marginal ratio bears directly upon the volume of total financing, and the average determines (given the depreciation rate) the contribution of the depreciation charges to *internal* financing. Given a functional relationship between output, volume of total net profits, and volume of expected profit retention, the average and the marginal capital-output ratios will also determine the share of total financing that would be contributed by undistributed net profits.

Kuznets admits that this is a partial-equilibrium model assuming a perfectly elastic supply of external funds to fill the gap left by internal financing.

Even the severest critic of the National Bureau of Economic Research should agree that this volume, in addition to supplying carefully documented empirical facts, makes a significant contribution to the theory of capital formation and financing. As the contributors to this volume recognize, the empirical findings and analytical discussion only provide the raw material for an evaluation of future prospects of capital formation and financing in *these* sectors. Ultimately, these sectors must be integrated into a general model of the economy as a whole. It is to be hoped that the sixth and summary volume in this series will be another step in this direction.

JOHN M. MATTILA

Wayne State University

Industrial Organization; Government and Business; Industry Studies

The Natural Gas Industry: Monopoly and Competition in Field Markets. By EDWARD J. NEUNER. Norman: University of Oklahoma Press, 1960. Pp. xx, 302. \$5.75.

According to its preface, the objective of this work is "to provide factual and analytical materials needed for a rational policy decision and to offer a policy judgment on the monopoly issue in natural gas production." In pursuit of that objective Professor Neuner had made an exhaustive investigation of performance in natural gas field markets in the 1945-1953 period.

The investigation is divided into three parts: (1) the development of data relating to and descriptive of the industry's structure, price behavior and market practices; (2) a detailed analysis of 723 gas purchase contracts to determine price patterns; and (3) an evaluation of the monopoly issue as it relates to the necessity for regulation of field prices.

Although it has been seven years since the Supreme Court¹ informed a reluctant Federal Power Commission that regulation of field prices charged by so-called "independent producers" to interstate pipelines is a part of its duty under the Natural Gas Act, the issue remains a lively one. Unfortunately, Neuner's decision to leave largely unrevised his doctoral dissertation of some years ago deprives the reader of the author's evaluation of the research which has been done in this field in recent years. Expert economic testimony relating to the workability of competition in natural gas markets has been presented and extensively cross-examined;² the behavior of field prices has been similarly subject to statistical analysis; and much has been written in this and other journals which sheds added light on this complex problem.³ Further, the price level as well as time has marched on: whereas natural gas delivered in 1953 under long-term contracts signed in South Louisiana in that year brought 9.45 cents per Mcf, gas delivered in 1959 under those same contracts brought 18.93 cents, and gas delivered in 1959 under contracts signed in 1959 commanded 21.49 cents.⁴

Despite this weakness—and given the massive effort which undoubtedly was involved in analyzing 723 gas purchase contracts, one can understand Neuner's reluctance to attempt a comparable updating—this work is extremely valuable to two groups. First, those who have been engaged in similar studies have found it an extremely useful compendium. Second (and perspective requires the admission "more important"), this work provides a useful model

¹ *Phillips Petroleum Company v. State of Wisconsin et al.*, 347 U.S. 672 (1954).

² See, for example, testimony of M. A. Adelman and of A. E. Kahn before the Federal Power Commission in its so-called *Omnibus* hearings (Docket G-9277 *et al.*), and of J. R. Foster *In the Matter of Gulf Oil Corp.*, Docket G-9520, *et al.*

³ See J. B. Dirlam, "Natural Gas: Cost, Conservation, and Pricing," *Am. Econ. Rev., Proc.*, May 1958, 48, 491-501.

⁴ Tabulation prepared for this reviewer by Jules Joskow, of National Economic Research Associates, Inc.

for economists desirous of putting the analytical tools of their trade to work on problems relating to regulation. This is true because of the author's ability to state clearly the difference between the regulatory problem created by monopoly (or lack of workable competition), and that created by the economic rents which may accrue to owners of a natural resource if certain institutional factors characterize a market.

Neuner states the significance of the latter issue most clearly (p. xix):

The significance of the scarcity return issue resides in its potential as a rationale for control. Even if no monopoly condition exists in natural gas production, a decision to seek the social appropriation of scarcity returns would justify a utility-type regulation of natural gas field prices. This is true since one of the effects of a cost-oriented system of utility regulation is to transfer scarcity returns to consumers in the form of lower prices.

Because of the virtually total unavailability to him of data relating to volumes of uncommitted gas reserves—those not already tied up under long-term contracts—the author finds himself forced to turn to estimates of the extent of concentration of control over all reserves. This is unfortunate, since Neuner recognizes that “monopoly power can be based upon a dominance over uncommitted gas supplies” (p. 241). Available information, unrebutted by those oil companies in a position to do so, indicates that the four largest oil companies controlled 40-50 per cent and the eight largest 60-70 per cent of uncommitted reserves at the end of 1955.⁵

Nevertheless, as Neuner indicates, acceptance of his conclusion (p. 245) that “the level of concentration in natural gas production is not excessive by comparison with manufacturing industry” does not solve the economist's problem of the appropriateness of price regulation. Even those most stongly in favor of such regulation concede that “the upsurge of price from one plateau to another has reflected the changing balance of demand and supply more than it has monopoly.”⁶ Rather, however one decides the monopoly issue, one must still reach some conclusion as to both the workability of competition and the related problem of the possible existence of large economic rents.

It is Neuner's view that field markets for natural gas are characterized by “numerous sellers capable of providing effective supply options to buyers” (p. 283). But how then does he explain testimony of pipeline buyers, supporting new price ceilings for gas purchases, that such ceilings were required because (to cite one example) a particular block of gas “was the only large package of gas for sale in the Gulf Coast area at the time”?⁷ This hardly sounds like a buyer casually selecting from among numerous realistically available options.

Neuner, of course, recognizes that the alleged absence of structural mo-

⁵ *Omnibus* proceeding, Vol. 38-LC, pp. 4961-2 and Exhibit 57-LC, Schedule 8.

⁶ A. E. Kahn, “Economic Issues in Regulating the Field Price of Natural Gas,” *Am. Econ. Rev.*, *Proc.*, May 1960, 50, 508.

⁷ William Witmer, vice president in charge of gas purchases for Tennessee Gas Transmission Co., Docket G-11024, pp. 46-48.

nopoly may be impaired by the fact that long-term contractual commitment of gas reserves focuses new demand—for the next 20 years—upon such reserves as may be available but uncommitted. This, combined with the problem then created by indefinite escalation clauses which transfer price levels in new contracts to supplies already contracted for, leads Neuner to recognize the probability of “a level of field prices higher than that which would prevail in a competitive field market” (p. 284). To avoid this he recommends replacement of long-term contracts with a publicly supervised, organized spot market for field gas. Even this, he feels, might not be sufficient to allow “competitive adjustment”; the costs to pipelines, distributors and consumers of leaving the market, i.e., abandoning their capital investments, are so large as to create immobilities which prevent the field price structure—once raised above competitive norms—from returning to competitive levels. Uncertainty as to the extent of the impact of such buyer immobility, however, leads Neuner to return to his conclusion that elimination of long-term contracts is an essential first step “if field price regulation is to be avoided” (p. 290). That first step has, of course, never been taken; if taken, the protection it alone would afford immobile consumers is doubtful. Regulation of field prices is, for this among other reasons, undoubtedly to remain a fact of life in the oil and gas industry.

IRWIN M. STELZER

National Economic Research Associates, Inc.

Economic Policy: Business and Government. By DONALD STEVENSON WATSON. Boston: Houghton Mifflin Co., 1960. Pp. xv, 829. \$7.50.

Professor Watson sets for himself the ambitious task of writing a text covering all economic policy—“action by government with the purpose of affecting economic life” (p. 4). He is concerned not only with the objectives of economic policy, both intermediate and remote, but also with the techniques to accomplish them (pp. 4-5). He discusses monetary and fiscal policy, the conservation of natural resources, promotion and regulation of transportation, social insurance, public housing, maintenance of competition, and minimum wages. He excludes “public education, national defense, veterans’ services and benefits, highways, and public works projects . . . because their purposes are not ‘economic’ ” (p. 8).

Watson begins with an extended discussion of the nature of policy. Basic to this discussion is the view that economic policy depends upon economic philosophy; and he distinguishes three contemporary economic philosophies: reform liberalism, neoliberalism, and conservatism. They differ in their emphasis on the relative importance of ethical values like happiness, freedom, equality, and humanitarianism; of political values like majority rule, and state and society; of economic values like the market and the functional forms of income.

But an economic philosophy is not an adopted policy. So Watson discusses the way economic philosophies are translated into policy proposals and then into policy in the context of the political and legal system. He also

discusses the nature of these policies including their means-end character and the instruments for accomplishing them.

Watson then examines each of the types of economic policy with attention to their secondary objectives and techniques. He discusses the regulation of competition and monopoly; control of business and labor organizations and regulation of transportation and public utilities; policies for promoting growth and stability, including aids to business as well as monetary and fiscal policy; income policies, including those concerned with the redistribution of income, raising low incomes, furthering social welfare, and ameliorating the farm problem; and foreign economic policy.

Watson provides a comprehensive review of economic policy in limited space. Summarizing the extensive literature on any one of the policy topics, much less all of them, to meet these space limitations is a monumental task. He has accomplished it by restricting himself largely to a description of the existing policies with some attention to their historical development. Sometimes the description is too cryptic for a satisfactory understanding of the policy, e.g., the rule of reason (pp. 263-64 and 268-69) and the incipency doctrine (pp. 276, 287-88, 290, 293) in maintaining competition.

His basic philosophy toward policy is best expressed by his quotation from the *Attorney General Committee's Report*, "logic has never been a predominant factor in the life of the law" (p. 180) and therefore "the individual bits and pieces of economic policy do not necessarily fit logically or rationally together. The bits and pieces of economic policy are not even like a patchwork quilt" (p. 5). His explanation of existing policies consists of showing that they are the consequence of the three contemporary philosophies. Occasionally he is left in the anomalous position of finding that the advocates of each philosophy recommend similar changes in policy, but the existing policy remains, e.g., the proposed modifications in laws of incorporation (p. 373) and in farm policy (p. 687).

One important element of the book is its emphasis upon the importance of government in the economy; but this strong point is turned into weakness by overemphasis. I was left with the impression that households and firms and their interaction in markets are unessential parts of the system which performs the economic functions in our society. In his description of existing policy and his attempt to explain it as a reconciliation of economic philosophies he neglects, among other things, the operation of the market and the factors which make some people believe that it is operating so "poorly" that it is necessary for the government to step in and remedy the situation.

Watson's attempt to prove that the United States' economic policy lacks logic would be much stronger if he examined individual policies in the light of the problems which gave rise to them and could show that they do not solve the problems (p. 5). Since there are multiple economic and noneconomic objectives of policy, as Watson correctly points out, it may not be possible for any particular policy to be compatible with all the objectives, and hence logical. One objective may be furthered only to the detriment of others, e.g., patent policy (pp. 308-12 and 477-80).

He has directed specific attention to some of the important issues in determining economic policy and in the government's role in promoting or impeding various economic objectives. The book, however, does not provide an understanding of, or promote a healthy respect for, the operation of the economic system without the intervention of government; nor does it explain government intervention as an attempt to solve particular problems. Moreover, he does not evaluate the effectiveness of the existing policy or alternative proposals as solutions of the particular problems which gave rise to them. There may be more order to economic policy than Watson finds.

BERNARD A. KEMP

Michigan State University

Principles of Public Utility Rates. By JAMES C. BONBRIGHT. New York: Columbia University Press, 1961. Pp. xii, 433. \$10.00.

Professor Bonbright has set a goal of combining the theoretical and practical aspects of public utility economics in one short volume. The author writes in the preface, "It has been my hope to make some contribution toward bridging the wide gap which unfortunately exists in this country between the thinking of the academic economists and that of the actual rate makers and rate regulators with respect to the goals of rate-making policy." As is often the case in such a gallant attempt, complete justice is not done to either the practical or theoretical portions of the analysis.

The title is somewhat misleading. The author cites limited examples from different utility industries, but most of the analysis centers on the electric utilities, with whose problems he has had a great deal of experience. Limited space is devoted to transportation rate-making, which, along with the frustrating natural gas problem, has been subject to more discussion in recent years than any other phase of the public utility problem.

The reader will be grateful that the author has avoided making the book an encyclopedia of legal analysis. Rather, it may be construed as variations on a main theme, set forth in Chapter 2 and developed in the following chapters:

Reasonable public utility rates, like reasonable prices in general, are rates designed to perform with reasonable effectiveness multiple functions as instruments of social control. But a system of rates that could be designed to perform any one of these functions is unlikely also to be the best that could be designed to perform any of the others. Hence, to a substantial extent, sound rate-making policy is a policy of reasonable compromise among partly conflicting objectives. (P. viii.)

Thus the author tries to treat the regulation of public utilities simply as an aspect of the basic economic problem allowing for imperfections.

The book is divided into three sections. Part I sets forth the basic criteria of reasonable rates and the public utility concept. The author defines a public utility in Chapter 1 as any enterprise subject to regulation, including price regulation, of a type designed primarily to protect consumers in the long run. This definition eliminates sporadic regulation passed to protect producers of the product. As the author states in a footnote on page 4, "protection of con-

sumers against exploitation at the hands of Natural Gas companies was the primary aim of the Natural Gas Act." Unfortunately, he has not included an analysis of this important current regulatory problem. Adequate regulation of gas includes dealing with the problem of economic rent in its most old-fashioned form—differential land productivity.

In Part II attention is centered on the determination of a company's entire rate level as measured by the standard of a reasonable return. The traditional problems of the criteria of a fair return, the rate base, cost or value, price-level changes, depreciation and replacement costs are discussed in this section. In Chapter 11 the author concludes with the suggestion "... that the real differences among the different jurisdictions are not based on the textbook distinction between an actual-cost principle of rate making and a reproduction-cost or present-value or competitive price principle. . . . They lie rather in different degrees of liberality in the rates of return that companies are allowed to enjoy *on their actual capital investment* . . ." (p. 282). In other words, the author feels that there is no pragmatic rule by which a given rate of return can be called reasonable or unreasonable. Rather, it is more often a question of consistently applying sound judgment in the light of all relevant circumstances. This might be a true statement for the electric utilities, but the author makes no attempt to relate this conclusion to the numerous other regulated industries. Furthermore, little attention is given to the hypothesis that the monopoly power held by public utilities may vary individually in time and between different utilities; changes in the characteristics explain the need for the changes in rate regulation and ultimately the changes themselves.

Part III is devoted to the rate structure and the conflicts of rate-making objectives. This section includes chapters on the following topics: Criteria of a Sound Rate Structure; Marginal Costs, Short-Run and Long-Run; Fully Distributed Costs; Discrimination, Due and Undue; and The Philosophy of Marginal-Cost Pricing. The author concludes with the following opinion: "... as setting a general basis of minimum public utility rates and of rate relationships, the more significant marginal or incremental costs are those of a relatively long-run variety, of a variety which treats even capital costs as variable costs. Short-run marginal costs should not be ignored. But they should be used with caution, and with special warning of the liability of rates based thereon to cancellation or revision on short notice" (p. 336). Most economists would agree with this last statement, and further insight is given to this problem, in the last chapter of the book, by the discussion of the philosophy of marginal cost pricing. This is one of the most important parts of the book, but unfortunately one of the shortest.

Bonbright closes his book by raising the question about taxes imposed upon private electric utilities in this country and the relative freedom from taxes enjoyed by publicly-owned utilities. After three paragraphs, without economic analysis, he favors attempts to put publicly-owned and privately-owned electric power systems more nearly on a par with respect to taxation. The author wisely adds a sentence recommending a thoroughgoing study of this question.

In general, the book is well done, the inquiry scholarly, and its contribution to the public utility literature is significant.

ERIC SCHENKER

University of Wisconsin, Milwaukee

Land Economics; Agricultural Economics; Economic Geography; Housing

Fundamentals of Forestry Economics. By WILLIAM A. DUERR. New York: McGraw Hill Book Co., 1960. Pp. x, 565. \$9.50.

Economic analysis is being given an increasingly significant role in the training of professional foresters. Forestry training in past decades appears to have been preoccupied with silviculture to the exclusion of economic principles and analysis. "Good forestry" seems to have been defined synonymously with "good silviculture" and independently of economic values. With the introduction of price and resource allocation theory, good forestry is being re-interpreted as only those good silvicultural practices which pass the economic test. Professor Duerr's book is a substantial contribution of economic analysis to this trend.

This text is written for the student who has completed a one- or two-semester course in principles of economics and "retained the customary amount of it." Emphasis is on economic principles applicable to forest management problems. Economic analysis is almost entirely in the area of microeconomics.

After an introduction placing forestry in its economic context, the balance of the book is divided into four areas: First, production theory is outlined in detail. Second, demand theory is introduced under several assumed competitive models. Third, miscellaneous institutions relevant to the forest economy are surveyed, including an extensive discussion on forest taxation with a valuable emphasis on the decision-making implications of alternative tax systems. The concluding fourth part of the book is concerned principally with economic and social planning from both the national and firm point of view.

Forestry as an area of applied economic analysis presents some challenging economic problems arising from its uncommon characteristics. Duerr identifies five distinguishing characteristics of an investment in timber production: First, "one cannot tell the product from the machine." Since the tree produces wood, one can rarely turn out the product without also "cashing in the machine." Second, there is an uncommonly long period of production (50 to 150 years). Third, Duerr holds that timber-growing produces only a modest rate of return on forest capital (2.4-7 per cent before taxes). The author also points out that timber ownership carries tax advantages making a forest investment more attractive than the above data suggest. Fourth, the alternative cost of money dominates the total cost of growing timber. Fifth, an investment in timberland is highly mobile. Being both machine and product, the whole investment may be liquidated by sale of the "machine" or by harvest. A sixth

distinctive characteristic not mentioned by Duerr is that, unlike automobiles and refrigerators, timber will be produced whether men will it or not. Forests may regenerate naturally. Capital may be withdrawn from timber production, but timber value may continue to be produced, though efficiency will vary with the ebb or flow of capital.

Iso-curves are used competently to conceptualize the decision-making problem in three situations: first, rationalizing alternative input factors to arrive at a least-cost combination; second, facilitating choice among rival products to arrive at a best-output combination; and third, identifying a theory of demand. Marginal analysis is utilized extensively to meet the one-variable problem, then is carried to the two-variable case where iso-curves are employed. The three- (or more) variable problem is defined "beyond the scope of this book." Linear programming is mentioned only in passing.

Similarly, Duerr's application of the theory of monopolistic competition is thorough and creditable. While the perfect competition model is suitable for analysis of standard grades in the lumber market, the timber industry broadly conceived embraces geographical monopoly (timber ownership), monopolistic competition (specialty plywood products) and monopsony (some timber buyers, such as pulp manufacturers).

Without the responsibility of authorship and unlimited by the hard necessity of allocating a multitude of interesting and useful ideas among scarce pages of a text, one can easily suggest additions to Duerr's book. Two such additions would include, first, an introduction to the capital budgeting problem from the works of Joel Dean and the Lutzes, and second, an introduction to programming. Knowledge of the capital budgeting process would not only be useful per se, but would further impress on the student of forestry that investment in "advanced" forest management practices must be justified in competition with alternative uses for scarce resources. An introduction to programming would be increasingly useful to forest managers. As the gift of existing old-growth timber is harvested, a number of alternative methods of producing varying amounts of wood fiber present themselves. Further, given the output of wood fiber, an expanding number of products compete for the resource. More variables are being introduced requiring minimizing and maximizing decisions within identifiable restrictions.

The book contains a minimum of minor errors. The stated objective of the firm for management planning (p. 233) should reflect a discounted rate of return rather than "the most net revenue per unit of time." A distinction between business cycles and secular trend (p. 304) is untidy. There is "cause and effect" confusion (p. 319) in the author's analysis of wage-price-investment relationships.

Duerr's competent and effective application of economic theory to forestry problems not only recommends the book; it also is gratifying to the general economist who is reminded of the wide relevance and utility of economic theory.

WALTER J. MEAD

University of California, Santa Barbara

Labor Economics

Real Wages in Manufacturing 1890-1914. By ALBERT REES, assisted by Donald Jacobs. Princeton: Princeton University Press, for National Bureau of Economic Research, 1961. Pp. xvi, 157.

This is a superb piece of work. Following the highest traditions of such predecessors as Mitchell and Kuznets at the National Bureau, and Paul Douglas at his own university, Rees has provided us with definitive figures on money wages earned in manufacturing as well as estimates of cost of living change for the period studied. His accomplishment consists in more than the estimates. It is to be found as well in the resourceful care with which each estimate has been examined, evaluated and tested before being accepted.

Rees begins from a puzzle: why do existing series tell us that real wages changed hardly at all from 1890 to 1914 although an upward trend apparently existed both before and after? Productivity gains during the period were marked, and competition lively. Why were the benefits not largely distributed to the wage-earner or ultimate consumer so that real wages gained? Dissatisfied with the explanation that all this was prevented by the heavy influx of immigration, Rees concluded that the cost-of-living index might be the statistical culprit—particularly since the same retardation appeared in Phelps-Brown's data for the United Kingdom, France and Germany. And the end of the story confirms his surmise: "The main source of the rise in real wages found in this study" is the fact that its cost-of-living index rises so much less than does that of Douglas. (The difference in estimates of money-wage trends is not substantial.) Let us consider in turn his two major series.

His cost-of-living index is derived with the most meticulous care. For the food, liquor and tobacco component he adopts the Douglas series, but only after sharp tests of its adequacy. His rent index represents a new departure, based on a laborious sampling of several thousand advertisements in the newspapers of six cities, the city indexes then being averaged to give a U.S. index. Clearly these direct measures improve on Douglas' implicit assumption that rents moved as did the average of other items. Rees and his associates compared rents at levels consistent with data from budget studies and housing surveys. Indeed there is hardly a technical adjustment that was not either made or carefully considered.

Some results are puzzling. In the recession of 1893-94, three of the five city indexes fall markedly—but two do not. In the 1907-08 recession, four of the six fall; and in 1913-14, three of the six fall. All series show a marked stability after about 1908. Perhaps most striking is the insensitivity of the New York index, which is between 98 and 100 in every year from 1908 to 1914. Since nearly five million immigrants flooded into the United States during these years, most of them through New York city, the index stability is noteworthy. It is not that rent indexes per se must look stable: this index gains 12 points in the single year 1903-04, and it falls five points from 1916 to 1917, when war production for the Allies began raising prices everywhere. Was the phasing of new construction so neat as to offset the migration in-

flux results over so much of this period? (Greater volatility does appear in the series for Cincinnati and St. Louis.) It would be of interest, however, to see whether greater changes resulted if more than a single person were responsible for picking the sample of rent advertisements.

The second advance in Rees' study is his use of mail-order catalogs to develop a retail price series—novel so far as such systematic and astute use of them is concerned. His housefurnishings series falls by 18 per cent over the period, while the corresponding WPI component gains 38 per cent. In part the difference reflects Rees' inclusion and WPI exclusion of stoves, refrigerators, sewing machines (all benefiting from marked productivity gains and, presumably, price declines)—and his exclusion of such stabler items as cutlery, dishes, and glasses. In part, however, it reflects differences for the same items, as Rees demonstrates with the two common-item series he develops. Both are roughly consonant over the first 20 years. A sharp break then appears, with the NBER retail series rising only 3 per cent from 1909 to 1913, while the BLS series rises by 23 per cent. One item accounts for over half the weight in the common item series and presumably accounts for this striking difference. For housefurnishings the common item indices show a coarse consonancy except for 1899-1905 when as a result of a contrasting change in one or two years the NBER series falls 10 per cent and the WPI rises 12 per cent.

Rees' wage series properly differs startlingly in level from Douglas'. He worked from Census and BLS data to get daily and hourly rates whereas Douglas was limited to admittedly high union rates for certain industries. His approach is an ingenious system that begins from annual earnings data of the Census of Manufactures; utilizes state Bureau of Labor reports to derive hours worked per year and BLS reports on hours worked per day to divide into these annual figures; thereby derives daily and hourly earnings. Rees fails to utilize the 1890 Census of Manufactures weekly earnings data. These could have given him much toward national benchmarks at the beginning of his daily earnings series, and for hourly earnings as well. But his care in making every possible adjustment, and his evaluation of his results is so meticulous that only a few minor changes would result from using the preferred source. (His averages for cotton, boots and shoes are within one cent of the Census figure; wool, within five cents. Only for paper, where his state estimates are thinnest, is his figure as much as 20 per cent lower.)

This basic study offers a reference frame against which many judgments about contemporary shifts in the economy can be tested. It is to be hoped that so admirable an accomplishment will encourage both the author and the National Bureau to extend their work of developing basic data. Rees' concluding analysis of the economic implications of his findings stays within the format for these studies, but is so penetrating as to suggest how much he could do with a fuller array of such reliable data.

STANLEY LEBERGOTT

Stanford University

Labor Commitment and Social Change in Developing Areas. Edited by WILBERT E. MOORE and ARNOLD S. FELDMAN. New York: Social Science Research Council, 1960. Pp. xv, 378. \$3.75.

This volume is a collection of essays concerned with labor and industrialization in emerging economies. The treatment is both from the theoretical and specific, inductive viewpoints. All the papers deal with aspects of the involvement or "commitment" of people who have had little or no experience in industrial society in a new pattern of social activity, an important segment of which is industrial, market activity.

The volume begins with a rather long essay by Feldman and Moore on the meaning of commitment of the labor force, the nature of the work place, of the market and of emerging society. The final essay is also by Feldman and Moore and attempts to tie together the abstract, theoretical notions and generalizations of the contributions.

The introductory essay deals with the social processes and values which the authors believe are necessary in an emerging industrial society. The model they construct is of course conceptual, as must be the case. However, there seems to be the implication that the characteristics, attributes, processes, and values of their model are not only necessary but probably uniquely necessary in an emerging society. Alternatives are not considered. This rigidity plus an involved style do not lend grace to the argument.

Indeed, Melville J. Herskovits (Ch. 8, "The Organization of Work") takes the two authors to task for confusing the *process* of economic development with the *form* of economic development. In Herskovits' view, which the present reviewer shares, the social forms or institutions in which a particular process, e.g., production, takes place may be many and varied. Indeed, it is quite conceivable that the technological system of a factory in the U.S. economy is similar to the technological system of a factory in some emerging society, while the socio-psychological structure of the two factories are quite different.

Herskovits in his chapter on "The Organization of Work," Hoselitz in his chapter on "The Market Matrix," and Kerr in his chapter on "Changing Social Structures" respectively present interesting discussions of the nature and role of labor in emerging industrial societies. Peter Gregory in his chapter on "The Labor Market in Puerto Rico," Morris David Morris in his chapter "The Labor Market in India," and Milton Singer in his chapter "Changing Craft Traditions in India" also present excellent inductive discussions.

On the whole, the volume is a successful one, especially since disciplinary lines are disregarded by the authors. The problems discussed are for the most part treated as general social problems rather than as problems limited and defined by a single academic discipline.

Persuasive evidence and analyses are offered by all the contributors indicating that, in one fashion or another, labor in underdeveloped societies can be, and in fact is, in varying ways committed to market economies and industrial activities. The strategic factor in development is not labor, although it may be a factor which does not operate in response to any universal rule

or set of rules. The setting and behavior pattern of the labor force vary from situation to situation.

The present reviewer is inclined to believe that meaningful generalizations might be adduced if some typological classifications were to be worked out for the underdeveloped societies. Both theoretical analysis and substantive policy would benefit greatly if the emerging societies were grouped in clusters with common characteristics and behavior patterns.

Different typological classifications might be necessary for different purposes, e.g., with regard to labor adaptability, capital accumulation, market involvement. The factors in the typologies would surely include economic considerations, but would also include others. Scientific and policy generalizations are always complex, but developing areas require a system of classification which would permit limited generalizations applicable to particular groupings.

SIDNEY C. SUFRIN

Syracuse University

Collective Bargaining in the Basic Steel Industry. United States Department of Labor. Washington: Supt. Docs., 1961. Pp. ix, 317. \$1.25.

At a time when many observers have voiced doubts about the state of the U.S. system of collective bargaining this report comes as a strong vote of confidence in that system. What is more this vote rests on a careful study of the operation of that system in the basic steel industry, which is a focal point of wide public concern over the implications of letting big powerful unions and corporations make unregulated bipartite decisions by a process that shuts down an entire industry at frequent intervals.

This report, which wades into and reaches conclusions on highly controversial issues, was put out by the U. S. Department of Labor under the Eisenhower administration. The then Secretary, James P. Mitchell, is to be commended for enriching the usually bland fare of departmental literature by initiating a study and report which, as he says, exemplify "the right of a free people to make searching and critical public inquiry through a public agency into matters of public concern." Although Mitchell has made no disclaimer, the report is plainly not made by the Labor Department and cannot be taken as an expression of its views. E. R. Livernash of the Harvard Business School directed the project and is chief author of the report. He had the benefit of twelve background papers and other materials prepared by consultants, mainly academic, and staff in the Bureau of Labor Statistics and of interviews with representatives of the parties. The report manifests some of the unevenness of style and depth of treatment which goes with a group effort made under pressure.

The report tackles questions about collective bargaining in basic steel under four main headings. Although the analysis and findings are carefully confined to the single industry, the problems considered are common to several large industries so that the conclusions have a wider relevance. The whole project having been inspired by the 1959 steel strike, the first issue discussed is the impact of steel strikes since the second world war. In the 14-

year period, 1946-59, five major strikes shut this industry down for a total of 282 days, more than three-quarters of a year. Applying various measures of cost and economic impact the report confirms the findings of other studies of so-called national emergency disputes, namely, that the impact of steel strikes on the economy has been seriously exaggerated. This is because the industry normally operates well below capacity and because both it and the industries it most affects practice substantial inventory accumulation. The report finds that even the 116-day strike in 1959 did not produce sufficient impact to justify the label, national emergency. One qualifying recommendation is made: that the parties and government explore the possibility of standing arrangements for meeting critical defense needs through partial operation during steel strikes.

The second subject investigated is the evolving character and quality of bargaining relationships. The report holds that bargaining structure, the public posture of the parties, their differing economic attitudes, and intervention by government have been mainly responsible for conflict. But it also finds that the parties have had notable bargaining accomplishments, have arrived at generally satisfactory contracts, and have enjoyed a high level of mutual accommodation in most areas of contract administration. It concludes that the much publicized work-practices issue is mainly symbolic.

On the third subject, the economic effects of bargaining settlements in steel, the report concludes that they have not had a predominant influence on wage trends in the economy and have had a minimal effect on the general price level. An important protection for steel users, it believes, is the notably more competitive environment in which the parties must now come to terms.

The fourth subject is the proper role of government in steel labor relations. After reviewing experience with the many modes of government intervention and dispute settlement that have been used, the report concludes that the best long-run policy in the interests of minimum conflict and satisfactory private agreement is nonintervention until a really late stage of dispute situations and then to participate only in informal and mediatory ways.

Strong partisans on all of the above subjects will obtain little satisfaction from this report. But its conscientious effort to explore all the evidence and its sober statement and qualification of conclusions carry conviction. Factual information brought together on the main issues and material provided in background chapters and appendixes on the parties, their bargaining organization, a profile history of negotiations since the beginning, and on steel labor relations abroad will prove very useful to students in the field.

VAN D. KENNEDY

University of California, Berkeley

Les théories modernes de l'exploitation du travail. By PIERRE MAURICE. Paris: Librairie Dalloz, 1960. Pp. 511.

This is an ably written, interesting, and well-reasoned critical analysis of the theory of the exploitation of labor. The author, of the University of Grenoble, France, divides his essay into three parts. In the first, the ethical

doctrines and the socialist theories of the exploitation of the worker are presented and discussed. In the second, the marginal analysis of the exploitation of the labor factor is discussed. In the concluding part, Maurice presents the elements of a new criticism and theory.

This book is of particular significance during the current year, which marks the seventieth anniversary of Pope Leo XIII's great social encyclical letter, *Rerum Novarum* (1891); and the thirtieth anniversary of the appearance of Pope Pius XI's important contribution to socio-economic thought through *Quadragesimo Anno* (1931).

To be able to judge the whole question of the exploitation of labor, one must remember the basic nature of the labor contract. It is not a contract of sale, or a contract of rent. It is something quite different from these, a *contractus sui generis*. The subject of this contract is the free man who promises to use his ability to work in the employ of somebody else, for which he expects to receive a wage corresponding to the value of his services from the other contracting party, the employer.

In employment relations, however, there is no exchange of goods for money. This is a situation where man faces man. The rendering of service has a human, personal character. The entrepreneur must recognize this fact and cannot calculate the just amount of pay without taking into account human labor's natural destiny and capacity to provide every worker with a living befitting human dignity. The general principle of equivalence which rules the whole system of exchange must, of course, apply. Hence two principles, that of equivalence between the wages received and the work rendered, and that of satisfying human needs, are the most important factors in determining the living wage.

Human labor has not only the natural destiny to earn a living for the worker, but also the natural capacity to do so under normal moral and economic conditions. Since labor is an exercise of human power which has as its natural purpose to support an average family, the average able-bodied worker is entitled to a living wage adequate for his family's maintenance. This living wage is the lowest limit of the just wage which is due the worker not only in social or distributive justice, but also in the strictest or commutative justice. The principle of wage determination is to consider subsistence in accordance with performance.

The average able-bodied adult male worker is entitled to a wage adequate for his family's support provided that the employer has the ability to pay such a wage, and that such a wage is in accord with the common good. An employer whose business is unsuccessful because of his incompetence, lack of knowledge, lack of energy, etc., is still under obligation to pay this living wage, his mismanagement being his own fault. A just amount of pay, adjusted to the public economic good, will help the workers to advance to the state of possessing some property, a condition which conforms not only with the satisfaction of the common good, but also with the Popes' teachings on the redemption of the nonowning classes.

Today, in the face of the threat of world communism, one cannot but be

alarmed at how little attention is being given to the concept of social justice, as outlined in the teaching of the social encyclicals. For one must agree with Boyer who observes: "If there had been, as the Papal Encyclicals urged, the slightest attempt to satisfy the legitimate aspirations of the working classes—aspirations which, be it noted, Communism cannot satisfy but which it exploits to the full for propaganda purposes—there would be no Communism today."

The worker remains a human being, an individual even if he is working for somebody else. The personal, human character of labor must be fully recognized. As a human being, as an individual, the worker is not a mere means of production. On the contrary, labor is, for the laborer, the natural, God-given means to realize his worldly, outward well-being. The purpose and goal of employment, therefore, should be not only the production of material goods, the gain of national wealth, the enrichment of the employer, but also and especially the attainment of the workingman's own goal in life.

GEZA GROSSCHMID

Duquesne University

Population; Welfare Programs; Consumer Economics

Demographic and Economic Change in Developed Countries—A Conference of the Universities—National Bureau Committee for Economic Research.

A report of the National Bureau of Economic Research, New York. Princeton: Princeton University Press, 1960. Pp. xi, 536. \$12.00.

The book consists of sixteen papers and comments by economists and demographers. The hoped-for external economies through cross-fertilization were, in the main, unrealized; i.e., in general, economists confined their comments to papers by economists. The same was true of demographers.

The work is divided into two parts. Part I, "The Analysis of Population Change," is largely, but not exclusively, descriptive, viz., international data on recent fertility trends; differential fertility in European countries and the United States; the influence of the business cycle on marriage and fertility. The conclusions that emerge are not new, viz., (1) "populations in all countries . . . appear to be reproducing themselves" (H. Gille, p. 34); (2) no clear relation exists between fertility and such variables as income, education, rural or urban residence; and (3) "deviations from trend of fertility rates seem to move in the same direction as the trend deviations of economic indicators . . . [however] economic fluctuations in themselves should not be regarded as primary *causes* of fertility trends, but as important conditioning influences" (D. Kirk, p. 254).

Part I also summarizes "Some Recent Developments in American Fertility Research" (D. Goldberg). A taste of the methodology employed can be gained from the following: The Indianapolis Study "did not yield any strong relationships between psychological variables—such as feelings of personal inadequacy, ego-centered interest in children, or felt restriction of personal freedom—and fertility" (p. 138). Further psychologizing in the field of social science attempts to establish the relation between wife (husband) dominance

and fertility patterns. Also, an attempt was made to discover the public's view of the ideal-size family. That the public's view of an ideal family-size changes with the tide of economic fortunes does not appear to have been appreciated by the investigators.

Concerning fertility dynamics, G. Becker contends "that the theory of demand for consumer durable goods is a useful framework in analyzing the demand for children" (p. 211). The determinants of fertility are "income, child costs, knowledge, uncertainty, and tastes" (p. 231). In analyzing child costs, it is necessary to distinguish between changes in the cost of a child of a given quality (a genuine price change) and changes in expenditures on children associated with changes in the quality of child demanded. Becker labors this point unnecessarily but concludes "that there was a secular rise in the cost of children which [coupled with the dissemination of contraceptive knowledge] also contributed to the secular decline in fertility" (p. 225). Conversely, "An increase in income and a decline in price would increase the demand for children although it is necessary to distinguish between the quantity and quality of children demanded." The reviewer must agree inasmuch as he has argued substantially the same thesis.¹ However, Becker's treatment of children as consumer durable goods is unrealistic. In the words of J. S. Duesenberry, "Becker assumes any couple considers itself free to choose any combination it wishes of numbers of children and expenditures per child (prices of particular goods and services being given)" (p. 233).

Part II deals with "The Economic Effects of Population Change." Typically, the title reflects the current, and I believe regrettable, tendency of economists to treat population change exogenously. Among the topics considered are the effects of population changes on demand for food (J. A. Crockett) and for services (R. Ferber). More generally, A. J. Coale attempts to determine the effects on total demand for goods and services consequent upon population growth. Rapid population growth changes the age composition of society. The number of economic dependents is increased, i.e., persons under 17 and over 70. *Ceteris paribus*, this induces an upward shift in the consumption function. The increased value of the multiplier might raise national income by "some 2 or 3 per cent" (p. 354).

S. Kuznets questions the dreary prognosis of the Malthusians, at least for industrialized countries (pp. 324ff.). But, alas, only for industrialized countries! Like F. Engels, T. Veblen, A. Marshall and J. M. Clark before him, Kuznets emphasizes "the increasing stock of tested, useful knowledge," which he associates with population growth. Given the economists' biased tool of diminishing returns, Kuznets' remarks are relevant. We need to be reminded of the actual course of economic progress during the past 250 years. Similarly, H. J. Barnett spells out in detail five conditions requisite for the fulfillment of the Malthusian bogey. Barnett rightfully points out that the Malthusian version of the "law" of diminishing returns involves a social production function; whereas, "The true 'law' of economics, is the static law

¹ *Population Theories and the Economic Interpretation*, New York and London, 1957, Part II.

of variable proportions. . . . This states, for the production of individual commodities, under invariant socio-technical conditions, that after some point additions of a single factor will yield diminishing marginal returns." However, Barnett then concludes, "Formulated rigorously, this is a provable proposition; it is a law" (pp. 439-40). But is it a law? Long ago Joan Robinson pointed out that the so-called law of diminishing returns is but a tautology since imperfect substitutability is the criterion used to differentiate factors of production (*The Economics of Imperfect Competition*, pp. 330-31). Barnett's paper also includes an interesting and critical discussion of the conservation movement in the United States.

Useful historical data on "Population Change and the Supply of Labor" are given by S. Lebergott (pp. 377ff.). However, Lebergott's thesis that the labor-force size is almost independent of population is legitimately challenged by J. Durand because participation rates (percentages of different sex-age groups of the population in the labor force) change but slowly (p. 419).

Space limitations preclude reference to all the papers. Those mentioned reflect the reviewer's preoccupation. In general, I believe the book will be useful for population seminars. I do not believe that the demographers' psychological bias will permit students to grapple successfully with demographic problems. I hope that the book will induce economists to reconsider the classical model and once again treat population (labor supply) as a dependent variable. An economic approach could eliminate otiose studies of differential fertility oriented to socio-economic status and other imprecise concepts, e.g., inferiority feelings, wife-husband dominance, etc. More positively, economists could develop data on historical changes in the quantity and quality of labor demanded. Further, the long-run stability of the consumption function obviously can be related to the secular rise in the cost of labor-power.

SYDNEY H. COONTZ

University of Utah

Full Employment, Inflation, and Common Stock. By MELVIN L. GREENHUT. Washington, D.C.: Public Affairs Press, 1961. Pp. vi, 87. \$3.25.

This 84-page study might have been titled *Personal Finance* for it is an effort to summarize conventional aggregate employment theory and to utilize this theoretical framework as a basis for a program of preferred use of individual savings.

The theoretical portion, which includes the first 22 pages, stresses the relationship of planned investment to planned saving plus the impact of a multiplier. This analysis is logically, geometrically, and algebraically straightforward, as it should be in a book aimed at the general reader. The general reader could be pardoned if he accepted the relationships utilized as generalizations of real world conditions, for neither here nor in later sections is reference made to the many studies which fail to substantiate basic assumptions of conventional aggregate employment theory.

The second part, which the author considers most important, is labeled "Business Fluctuations." In 24 pages the author considers factors affecting

investment and saving, the depression of the 'thirties, the inflation of the 'forties and the 'fifties, and feasible government policies related to economic growth. The range of topics is wide as is appropriate to the stated purpose. However, in this type of analysis it does not seem appropriate to include a detail such as insurance and transportation cost of shipping gold to Great Britain. This section is uneven and makes very little use of statistics in developing the analysis.

Part III, titled "Forecasting and Investing," is primarily concerned with expectations of continued inflation, "occasional recessions," and how these expectations should affect a personal investment program. The basic recommendation is to purchase common stock with savings. This recommendation is supported by the two basic expectations, and in addition by some analyses which indicate bond prices do not adequately discount the expected fall in the purchasing power of the monetary unit.

While reading this brief book I continually thought about the weakness of the relationship between economic theory and policy that is demonstrated again by the author's efforts in this direction. I doubt that the effort is worth while in a brief discussion for it is practically impossible to avoid giving the impression that the theory is a generalization of the real world—an achievement not likely to be helpful.

RICHARD W. LINDHOLM

University of Oregon

TITLES OF NEW BOOKS

General Economics; Methodology

- CANTERBURY, E. R. *The President's Council of Economic Advisers—a study of its functions and its influence on the Chief Executive's decisions.* New York: Exposition Press, 1961. Pp. 166. \$4.
- CLARK, R. M., ed. *Canadian issues—essays in honour of Henry F. Angus.* Toronto: Univ. of Toronto Press for Univ. of British Columbia, 1961. Pp. xx, 371. \$7.50.
- DEL VECCHIO, G. *Economia Generale.* Turin: UTET, 1961. Pp. xii, 813. L. 7.200.
- EASTHAM, J. K. *Graphical economics.* Chicago: Quadrangle Books, 1961; London: English Univ. Press, 1960. Pp. xiv, 333. \$6; 25s.
- FELS, R. *Challenge to the American economy: an introduction to Economics.* Boston: Allyn and Bacon, 1961. Pp. xvii, 708. \$7.95.
- FISHER, I. N. comp. *A bibliography of the writings of Irving Fisher.* New Haven: Yale Univ. Lib., 1961. Pp. xi, 543. \$10.
- GREY, A. L., JR. AND ELLIOTT, J. E. *Economic issues and policies—readings in introductory economics.* Boston: Houghton Mifflin, 1961. Pp. xi, 420. Paper, \$3.75.
- GROSSMAN, M. C., HANSEN, R. R., HENDRIKSEN, E. S., McALLISTER, H. E., OKUDA, K. AND WOLMAN, W., ed. *Readings in current economics.* Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xii, 486. \$6.
- GUTHRIE, J. A. *Economics.* Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xviii, 678. \$9.35.
- HEGELAND, H., ed. *Money, growth, and methodology—and other essays in economics.* In honor of Johan Åkerman, March 31, 1961. Lund soc. sci. stud. no. 20. Lund: CWK Gleerup, 1961. Pp. xii, 509.
- MESTMÄCKER, ERNST-JOACHIM, ed. Böhm, F. *Reden und Schriften über die Ordnung einer freien Gesellschaft, einer freien Wirtschaft und über die Wiedergutmachung.* Karlsruhe: Verlag C. F. Müller, 1960. Pp. 340. DM 33.
- PEACOCK, A. T., TURVEY, R., STOLPER, W. F. AND LIESNER, H., ed. *International economic papers No. 10.* New York: Macmillan, 1960. Pp. 193. \$4.75.
- Translations of articles by the following authors: Erik Lindahl, Gottfried Bombach, H. Theil, W. Nördling, Paul Rosenstein-Rodan, Osvaldo Sunkel, Bertil Ohlin, Maurice Boiteux, Y. Malishev, Hans Brems. The volume also contains a classified index of the contents of the first ten volumes.
- PERROUX, F. *Économie et société: contrainte—échange—don.* Paris: Presses Univ. de France, 1960. Pp. 186. NF 6.
- PIATIER, A. *Statistique et observation économique.* Vol. 1. *Méthodologie—statistique.* Vol. 2. *Économétrie—conjoncture—comptabilité nationale.* Paris: Presses Univ. de France, 1961. Pp. 468; 504. NF 20; 22.
- SAMUELSON, P. A. *Economics—an introductory analysis.* 5th ed. New York: McGraw-Hill, 1961. Pp. x, 853.
- SCHONFIELD, A. *An attack on world poverty.* London: Chatto & Windus, 1960. Pp. x, 244. 21s.
- SPIEGEL, H. W. *Current economic problems.* 3rd ed. Homewood, Ill.: Irwin, 1961. Pp. x, 694. \$10.60.
- Kobe Economic & Business Review: 7th annual report. Rokko, Kobe: Research Inst. for Econ. and Bus. Admin., Kobe Univ., 1960. Pp. 123.
- A collection of essays.
- Kobe University International Economic Review—11th annual report. In Japanese. Kobe: Research Inst. for Econ. and Bus. Admin., Kobe Univ., 1961. Pp. 240.

Ocherki po sovremennoy sovetskoy i raubezhnoy ekonomike, soornik statey, Vyp. 1. (Essays on contemporary Soviet and foreign economics, collection of articles, ser. 1.) Moscow: Pub. House for Planning, 1960. Pp. 308.

Proceedings of the thirty-fifth annual conference of the Western Economic Association. Stanford, California, August 24-26, 1960. L. Nabers, Univ. of Utah, editor. Salt Lake City: Western Econ. Assoc., 1960. Pp. 86.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

CHIKOSH-NAD, B. Problemy tsenoobrazovaniya i politika tsen. (Problems of price formation and price policy.) Moscow: Sotsekgiz, 1960. Pp. 478.

CHUKHNO, A. A. Ekonomichny zakon rozpodilu po pratsl ta yoho zdiysnennya. (Economic law of distribution according to labor and its realization.) Kiev: Shevchenko State University, 1959. Pp. 130.

An attempt to prove on the basis of empirical data from the Ukraine's coal industry that Soviet wages correspond to the "labor law of value."

DUCHINI, F. Il profitto nella teoria economica contemporanea—saggio di storia delle dottrine economiche. Saggi di teoria e pol. econ. no. 8. Milan: A. Giuffrè, 1960. Pp. 236. L. 1200.

DUE, J. F. AND CLOWER, R. W. Intermediate economic analysis—resource allocation, factor pricing, and welfare. 4th ed. Homewood, Ill.: Irwin, 1961. Pp. xiv, 545. \$10.60.

FROMM, E. Marx's concept of man. With a translation from Marx's *Economic and philosophical manuscripts* by T. B. Bottomore. New York: Frederick Ungar, 1961. Pp. xii, 260. \$4.75; paper, \$1.75.

HAAVELMO, T. Study in the theory of investment. Econ. research stud. Chicago: Univ. of Chicago Press, 1960. Pp. viii, 221. \$5.

JASKARI, O. V. Depreciation allowances and the real capital. Helsinki: Suomalaisen Tiedeakatemia Toimituksia, 1960. Pp. 68.

JOCHIMSEN, R. Ansatzpunkte der Wohlstandsökonomik—versuch einer Neuorientierung im Bericht der normativen Lehre vom wirtschaftlichen Wohlstand. Veröffentlichungen d. List Gesellschaft Vol. 21. Basel: Kyklos-Verlag; Tübingen: J.C.B. Mohr (Paul Siebeck), 1961. Pp. xi, 115. DM 15.

KEIFER, J. S., KURNOW, E., CLARK, C. D. and SEGAL, H. H. Theory and measurement of rent. Philadelphia: Chilton, 1961. Pp. xi, 194. \$7.50.

"This study was undertaken to trace the origin and development of the theory of land-rent, to reappraise the conclusions of contemporary economics, and to test the current assumptions and analysis with an up-to-date measure of land-rent. Our statistical estimates, unlike the Department of Commerce measures, are designed to approximate the value of the services of land alone." (From the authors' preface.)

MALANOS, G. J. Early cardinal utility theory. Stud. in bus. and econ. bull. no. 8. Atlanta: Bur. Bus. and Econ. Research, School Bus Admin., Georgia State College of Bus. Admin., 1960. Pp. 40.

MODIGLIANI, F. and COHEN, K. J. The role of anticipations and plans in economic behavior and their use in economic analysis and forecasting. Stud. in bus. expectations and planning no. 4. Urbana: Univ. of Illinois Bur. of Econ. and Bus. Research, 1961. Pp. 166. 2.75.

MRACHEKOVSKAYA, I. M. RAZVITIYE V. I. Leniny teori reproduktstva. (V. I. Lenin's contribution to the theory of reproduction.) Moscow: Sotsekgiz, 1960. Pp. 176.

RAUNER, R. M. Samuel Bailey and the classical theory of value. Cambridge: Harvard Univ. Press, 1961. Pp. vii, 162. \$5.50

RUBEL, M., ed. Études de Marxologie. Cahiers I.S.E.A., no. 109, Sér. S., no. 4. Paris: Inst. Sci. Econ. Appliquée, 1961. Pp. 164. Essays by S. Na'aman, N. McInnes, and selections from K. Marx and F. Engels.

- THEIL, H. Economic forecasts and policy. Contrib. to econ. analysis, no. 15. 2nd rev. ed. Amsterdam: North-Holland Pub., 1961. Pp. xxxii, 567. \$11.25.
- THEOCHARIS, R. D. Early developments in mathematical economics. New York: St. Martin's Press; London: Macmillan, 1961. Pp. x, 142. \$6.50.
- VINER, J. The intellectual history of laissez faire. Henry Simons Lecture, no. 2. Chicago: Univ. of Chicago Law School, 1961 Pp. 24. 75c.
- WEINTRAUB, S. Classical Keynesianism monetary theory and the price level. Philadelphia: Chilton, 1961. Pp. ix, 190. \$4.
- WEISS, L. W. Economics and American industry. New York: John Wiley, 1961. Pp. xi, 548. \$7.50.
- Studi del laboratorio de economia Vilfredo Pareto dell'Universita de Genova. Ser. A, vol. 1, Celebrazione Franco-Italiana di Vilfredo Pareto, Paris, September 30, 1960. Ser. A. vol. 2, *Oeconomica varia*—excerpta. Edited by E. Fossati. Milan: 1960. Pp. 28; 253.

Economic History; Economic Development; National Economies

- ADLER, J. H. Recursos financieros y reales para el desarrollo. Mexico, D. F.: Centro Estudios Monetarios Latinoamericanos, 1961. Pp. 148.
- BANANI, A. The modernization of Iran 1921-1941. Stanford: Stanford Univ. Press, 1961. Pp. ix, 191. \$5.
- BAUDIN, L. A socialist empire—the Incas of Peru. Transl. from the French by K. Woods, A. Goddard, ed. Princeton: Van Nostrand, 1961. Pp. xxii, 442. \$8.
First published in 1928 as Vol. 5 of *Travaux et mémoires de l'Institute d'Ethnologie*, Université de Paris.
- BENHAM, F. AND HOLLEY, H. A. A short introduction to the economy of Latin America. London: Oxford Univ. Press for Royal Inst. of Internat. Affairs, 1960. Pp. x, 169. 18s.
- BOLINO, A. C. The development of the American economy. Columbus: Merrill Books, 1961. Pp. xi, 610.
- BRAIBANTI, R. AND SPENGLER, J. J., ed. Tradition, values, and socio-economic development. Commonwealth-Studies Center pub. no. 13. Durham: Duke Univ. Press for Duke Univ. Commonwealth-Studies Center; London: Cambridge Univ. Press, 1961. Pp. viii, 305. \$6. Contributions by J. J. Spengler, W. E. Moore, B. F. Hoselitz, M. J. Herskovits, R. Braibanti, I. H. Qureshi, J. D. Montgomery and M. Wade.
- CHAMBERS, J. D. The workshop of the world—British economic history from 1820 to 1880. New York: Oxford Univ. Press, 1961. Pp. 239. \$1.40.
- COLE, G. D. H. AND POSTGATE, R. The British people 1746-1946. New York: Barnes & Noble; London: Methuen, 1961. Pp. x, 742; Paper, \$1.95.
First published in Great Britain as: *The Common People*.
- COWAN, H. I. British emigration to British North America—the first hundred years. Rev. ed. Toronto: Univ. of Toronto Press, 1961, Pp. xi, 321. \$6.95.
- DATTA, A. Essays on economic development. 2nd ed. Calcutta: Bookland, 1961. Pp. ii, 158. Rs 10.
- DISKALKAR, P. D. Resurvey of a Deccan village Pimple Saudagar. Bombay: Indian Soc. Agric. Econ., 1960. Pp. xiv, 160. Rs 7.
- EASTERBROOK, W. T. AND AITKEN, H. G. J. Canadian economic history. New York: St. Martin's; Toronto: Macmillan of Canada, 1958. Pp. xiii, 606. \$8.
- EISNER, G. Jamaica, 1830-1930—a study in economic growth. New York: Barnes & Noble, 1961. Pp. xxiii, 399. \$10.
- ELLIS, H. S., ed. with WALLICH, H. C. Economic development for Latin America—proceedings of a conference held by the International Economic Association. New York: St. Martin's Press, 1961. Pp. x, 479. \$10.
- FRANZSEN, D. G. Economic growth and stability in a developing economy—some aspects of the union's post-war experience. Pretoria: Van Schaik, 1960. Pp. 102. R 1.85.
- GAATHON, A. L. Capital stock employment and output in Israel 1950-1959. Spec. stud. no. 1. Jerusalem: Bank of Israel, Research Dept., 1961. Pp. xviii, 129. Lf 3.

- GOUDOT, P. The tropical world—its social and economic conditions and its future status. 3rd ed. New York: Longmans, Green, 1961. Pp. xii, 159. \$4.25.
- GRACE, J. P. It is not too late in Latin America—proposals for action now. New York: W. R. Grace & Co., [1961.] Pp. 74.
- GUILLOT, J. Le développement économique de L'Algérie. Cahiers I.S.E.A., no. 108 sér. F, no. 15. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 219.
- HAZLEWOOD, A. AND HENDERSON, P. D. Nyasaland—the economics of federation. Oxford: Basil Blackwell, 1960. Pp. 91. 10s. 6d.
- HICKS, U. K. Development from below—local government and finance in developing countries of the Commonwealth. New York: Oxford Univ. Press, 1961. Pp. xiii, 549. \$5.60.
- HIRSCHMAN, A. O., ed. Latin American issues—essays and comments. New York: Twentieth Century Fund, 1961. Pp. 201. Paper, \$1.45.
- . The strategy of economic development. New Haven: Yale Univ. Press, 1961. Pp. xiii, 217. Paper, \$1.45.
- Originally published as Vol. 10, Yale Stud. in Econ., 1958.
- IYENGAR, S. K. A decade of planned economy—a critical examination of Indian plans. Mysore: Indian Acad. of Econ., 1961. Pp. xvi, 347. \$6.
- JACKSON, B. India and the West. New York: Norton, 1961. Pp. 256.
- JASNY, N. Soviet industrialization 1928-1952. Chicago: Univ. of Chicago Press, 1961. Pp. xviii, 467. \$10.
- JORRÉ, G. The Soviet Union—the land and its people. 2nd ed. Transl. by E. D. Laborde. New York: Longmans, Green, 1961. Pp. xx, 372. \$7.50.
- KARKHIN, G. A system of indicators for the economic competition between the USSR and U.S. Washington: Joint Pub. Research Svce., 1961. Pp. 11.
- KIRKLAND, E. C. Industry comes of age—business, labor, and public policy 1860-1897. Economic hist. of U.S., vol. 6. New York: Holt, Rinehart and Winston, 1961. Pp. xiv, 445. \$7.50.
- KLEIN, L. R., BALL, R. J., HAZLEWOOD, A. AND VANDOME, P. An econometric model of the United Kingdom. Oxford: Basil Blackwell, 1961. Pp. xii, 312. 60s.
- KRAUSE, W. Economic development—the underdeveloped world and the American interest. San Francisco: Wadsworth, 1961. Pp. vii, 524. \$8.50.
- LABARGE, R. A. Impact of the United Fruit Company on the economic development of Guatemala 1946-1954. Preprint pub. 29. New Orleans: Middle American Research Inst., Tulane Univ., 1960. Pp. 72.
- LAKDAWALA, D. T. AND SANDESARA, J. C. Small industry in a big city—a survey in Bombay. Econ. ser., no. 10. Bombay: Bombay Univ. Press, 1960. Pp. xvi, 387. Rs 20.
- LAMFALUSSY, A. Investment and growth in mature economies—the case of Belgium. New York: St. Martin's Press; London: Macmillan, 1961. Pp. xviii, 206. \$7.50.
- MILLIKAN, M. F. AND BLACKMER, D. L. M., ed. The emerging nations—their growth and United States policy. Boston: Little, Brown, 1961. Pp. xiv, 171. \$4.50.
- "For some years the Center for International Studies [MIT] has been conducting a series of separate studies in the economics, politics, sociology, and psychology of the underdeveloped parts of the world. We recently concluded that the time had come to try to weave the various insights gained from this research into a reasonably integrated account of the transition through which the emerging nations are passing. What is here offered is not a theory of national development. Rather, it is an attempt by a number of people who have been approaching a problem from different directions and with different interests to explore in a tentative way the relationships among the elements they have been studying." (From the foreword.)
- MIRABELLA, G. La ricchezza monetaria nella economia italiana. Palermo: Sem. Econ. Pol. e Sci. d. Fin., Univ. di Palermo, 1961. Pp. 150.

- OKUN, B. AND RICHARDSON, R. W., ed. *Studies in economic development*. New York: Holt, Rinehart and Winston, 1961. Pp. ix, 498. \$7.
A book of readings.
- ONODY, C. A. *inflação Brasileira 1820-1958*. Rio de Janeiro: Confederação Nacional da Indústria, Dept. Econ., 1960. Pp. 419.
- PARISH, W. J. *The Charles Ifield Company—a study of the rise and decline of mercantile capitalism in New Mexico*. Harvard stud. in bus. hist. no. 20. Cambridge: Harvard Univ. Press, 1961. Pp. xxi, 431. \$10.
- PAYNE, P. L. *Rubber and railways in the nineteenth century—a study of the Spencer Papers*. Liverpool: Liverpool Univ. Press, 1961. Pp. xiv, 246. 30s.
- PEPELASSIS, A., MEARS, L. AND ADELMAN, I. *Economic development—analysis and case studies*. New York: Harper, 1961. Pp. viii, 620. \$8.50.
- PREST, J. *The industrial revolution in Coventry*. London: Clarendon Press, 1960. Pp. xi, 152. 21s.
- PUTHUCHEARY, J. J. *Ownership and control in the Malayan economy*. London: Univ. of London Press, 1960. Pp. xxii, 187. 14s. 3d.
- QURESHI, A. I. *Developments in Pakistan economy since the revolution*. Karachi: Nabeel, 1961. Pp. 195.
- SCHUMPETER, J. A. Transl. from the German by R. Opie. *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. New York: Oxford Univ. Press, 1961. Pp. xii, 255. Paper, \$1.50.
First pub. by the Dept. of Econ., Harvard Univ. as vol. 46, Harvard econ. stud. ser., 1934.
- STARK, H. *Social and economic frontiers in Latin America*. Dubuque: Wm. C. Brown, 1961. Pp. xx, 421. \$7.25.
- STRUMILIN, S. G. *Ocherki sotsialisticheskoi ekonomiki SSSR (1929-1959 gg)*. (Sketches of the Socialist economy of the U.S.S.R., 1929-1959.) Moscow: Gosudarstvennoe izdatel'stvo politicheskoi literatury, 1959.
- STULMAN, J. *World economic development—a program for utilization of full capacity production*. Washington: Public Affairs Press, 1961. Pp. 16.
- TAMANES, RAMON. *Estructura económica de España*. Madrid: Sociedad de Estudios y Publicaciones, 1960. Pp. 677.
- TENENBAUM, E. A. *Comments on the report "Israel's industrial finances: a second look."* Jerusalem: Research Dept., Bank of Israel, 1961. Pp. 81.
- VASQUEZ DE PRADA, V. *Lettres marchandes d'Anvers*, Vol. 4. *École Pratique des Hautes Études*. Paris: S.E.V.P.E.N., 1960. Pp. 403. NF 45.
- VITO, F., FEROLDI, F. and others. *Lo sviluppo economico regionale*. Prob. econ. d'oggi no. 3. Milan: Vita e Pensiero, 1961. Pp. 199. L. 1600.
- WAGLE, S. S. *Technique of planning for accelerated economic growth of underdeveloped countries*. Bombay: Vora, 1961. Pp. 296. Rs 12.
- WAPENHANS, W. *Griechenland—Untersuchungen über die Wirtschaft eines kontinentaleuropäischen Entwicklungslandes*. Giessen: Wilhelm Schmitz, 1960. Pp. 162. DM 18.
- WILLIAMS, W. A. *The contours of American history*. Cleveland: World Pub. Co., 1961. Pp. 513. \$7.50.
- WOOD, R. C. WITH V. V. ALMENDINGER. *1400 Governments—the political economy of the New York metropolitan region*. Cambridge: Harvard Univ. Press, 1961. Pp. xviii, 267. \$5.75.

"This is one of a series of books on the forces that shape . . . the largest and most complex metropolitan area in the United States. . . . The present volume deals with the impact of local government programs and the political processes which underlie the pattern of urban development." (From the foreword.)

- African development, a test for international cooperation. Menlo Park, Calif.: Internat. Develop. Center, Stanford Research Inst., 1960. Pp. 170.
- Annotated economic statistics of Japan for postwar years up to 1958. In Japanese. Tokyo: Inst. of Econ. Research, Hitotsubashi Univ. Pp. vii, 192.
- Area Redevelopment act. Hearings before Subcommittee no. 2, House Committee on Banking and Currency, 87th Cong., 1st sess., Feb. 24-28, Mar. 1-13, 1961. Washington: Supt. Docs., 1961. Pp. 804.
- Area redevelopment—1961. Report . . . together with individual views to accompany S. 1, Senate Committee on Banking and Currency, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 76.
- The California economy, 1947-1980. Menlo Park: Stanford Research Inst., 1960. Pp. xi, 456.
- A project prepared by an economic research team consisting of R. K. Arnold, N. T. Houston, R. G. Spiegelman, O. V. Poland, and C. A. Trexel, Jr.
- Distressed areas in a growing economy. CED Research and Policy Committee statement on nat. policy. New York: Com. for Econ. Develop., 1961. Pp. 74. \$1.
- The economic development of Venezuela. Baltimore: Johns Hopkins Press for Internat. Bank for Reconstruction and Develop., 1961. Pp. xviii, 494. \$8.50.
- Economic information on Communist China. No. 3. Washington: Joint Pub. Research Svce., 1961. Pp. 192.
- Inflation in a developing economy. Research pub. ser. 3. Bombay: Indian Merchants' Chamber Econ. Research & Training Foundation, [1961.] Pp. 121. Rs 6.
- L'Islam, l'économie et la technique. Cahiers I.S.E.A., no. 106, sér. V, no. 2. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 212.
- Contributions by: A. Abel, P. Rondot, R. Arnaldez, J. Servier, G. Destanne de Bernis and J. Austruy.
- Narodnoye khoziaistvo SSSR v 1959 g.—statisticheski ezhegodnik. (The national economy of the USSR, statistical yearbook.) Moscow: Pub. House for Stat. Lit., 1960. Pp. 896.
- Osobennosti i factory razmeshchenia otrasley narodnogo khoziaistva SSSR. (Characteristics and factors of location of branches of the national economy of the USSR.) Moscow: Acad. of Sci. USSR, 1960. Pp. 696.
- The permanent frontier—an illustrated history of the U.S. economy in action. New York: Inst. of Econ. Affairs, New York Univ., 1961. Pp. vi, 120. \$3.95.
- Le plan septennal soviétique—études et documents. Cahiers I.S.E.A., no. 107, sér. G., no. 10. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 367.
- Contributions by: F. Braudel, F. Perroux, H. Chambre, B. Kerblay and A. Nove.
- Postroyeniye fundamenta socialisticheskoy ekonomiki v SSSR 1926-1933. (The building of the foundations of a socialist economy in the USSR 1926-1933.) Moscow: Acad. of Sci. USSR, 1960. Pp. 574.
- Resources for the third five year plan—a research study and analysis. Research pub. ser. 2. Bombay: Indian Merchants' Chamber Econ. Research & Training Foundation, [1961.] Pp. 148. Rs 7.
- Review of the second year plan program of Iran. Tehran: Division of Econ. Affairs, Plan Org., 1960. Pp. 150.
- SSSR—S Sh A—tsyfry i facty. (USSR—USA, statistics and facts.) Moscow: State Pub. House for Pol. Lit., 1961. Pp. 134.
- Techno-economic survey of Manipur—economic report. Imphal: Manipur Admin. for Nat. Council of Applied Econ. Research, 1961. Pp. xi, 128. Rs 15.
- L'U.R.S.S. et les pays de L'Est. Strasbourg, Centre de Recherches sur L'U.R.S.S. et les Pays de l'Est. *Revue des Revues* no. 2-3, Dec., 1960. Paris: 1960. Pp. 286.

Statistical Methods; Econometrics; Social Accounting

- ACKOFF, R. L., ed. Progress in operations research. Pub. in op. research, no. 5. New York: Wiley for Operations Research Society of America, 1961. Pp. 505.
- ELIAS, A. Soviet practice in the classification of economic activity. Internat. population rept. no. 57. Washington: Dept. of Commerce, Bur. of the Census, 1961. Pp. 40.
- FUNCK, R. Verkehr und volkswirtschaftliche Gesamtrechnung. Forschungen Inst. f. Verkehrswissenschaft, Univ. Münster no. 14. Göttingen: Vandenhoeck & Ruprecht, 1961. Pp. 59. DM 28.
- HANSON, K. O. AND BRABB, G. J. Managerial statistics. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. viii, 342. \$6.95.
- HATANAKA, M. The workability of input-output analysis. Ludwigshafen am Rhein: Fachverlag f. Wirtschaftstheorie und Ökonometrie, 1960. Pp. xxiii, 310.
- MOSTELLER, F., ROURKE, R. E. K. AND THOMAS, G. B. JR. Probability: a first course. Reading, Mass.: Addison-Wesley, 1961. Pp. xv, 319. \$5.
- . Probability with statistical applications. Reading, Mass.: Addison-Wesley, 1961. Pp. xv, 478. \$6.50.
- NETER, J. AND WASSERMAN, W. Fundamental statistics for business and economics, 2nd ed. Boston: Allyn and Bacon, 1961. Pp. xiv, 838. \$7.95.
- Output, input, and productivity measurement. National Bureau of Economic Research Studies in Income and Wealth Volume Twenty-Five by the Conference on Research in Income and Wealth. Princeton: Princeton Univ. Press, 1961. Pp. x, 506. \$10.
- Also included are author and title indexes for volumes 1-25 of Studies in Income and Wealth.

Economic Systems; Planning and Reform; Cooperation

- ATLAS, M. S. AND OTHERS, ed. Politicheskaya ekonomia socializma. (Political economy of socialism—textbook for economics departments and faculties.) Moscow: Univ. Pub. House, 1960. Pp. 782.
- CUKOR, G. Questions de la planification économique en Hongrie. Budapest: Hungarian Acad. Sci., 1961. Pp. 55.
- DESAI, M. B. Co-operation in Karjan—a report on the working of the co-operative movement in Karjan Taluka. Bombay: Indian Soc. Agric. Econ. 1961. Pp. viii, 131. Rs 5.
- DRAGILEV, M. S. AND RUDENKO, G. F. Monopolisticheski kapitalizm, ocherki osnovnykh chert imperializma. (Monopoly capitalism, a sketch of the principal features of imperialism.) Moscow: Pub. House for Soc. Econ. Lit., 1961. Pp. 479.
- KUPARADZE, G. Z., Spravochnik ekonomista. (An economist's handbook.) Tbilisi. Izdatel'stvo GSKhI, 1960. Pp. 592.
- KUZIN, N. I. Finansy gosudarstvennoy torgovli SSSR i ikh planirovaniye. (Finance of state trading in the USSR and their planning.) Moscow: Pub. House for Construction Ind., 1961. Pp. 208.
- LOUCKS, W. N. Comparative economic systems. 6th ed. New York: Harper, 1961. Pp. xiv, 801. \$8.
- MARGOLIN, I. S. Planirovaniye finansov. Finansy i denezhnoye obrashchenie v narodno-khoziastvennom plane SSSR. (Financial plannings, finance and money circulation in the national-economic plan of the USSR.) Moscow: Pub. House for Planning, 1960. Pp. 160.
- TSURU, S., ed. Has capitalism changed: An international symposium on the nature of contemporary capitalism. Tokyo: Iwanami Shoten, 1961. Pp. iv, 222. \$4.
- WAGENLEHNER, G. Das sowjetische Wirtschaftssystem und Karl Marx. Cologne: Kiepenheuer & Witsch, 1960. Pp. 354. DM 15.80.
- Problemy politicheskoy ekonomii socializma—sbornik statey. (Problems of the political economy of socialism—collection of essays.) Moscow: Pub. House for Pol. Lit., 1960. Pp. 304.

Rationalité et croissance économiques soviétiques. Économie planifiée—textes et analyses (9). Cahiers I.S.E.A., no. 104, sér. G, no. 9. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 135

Contributions by: A Nove, H. Chambre, T. Khatchaturov, M. Usyk and N. Karotamm.

Business Fluctuations

BRATT, E. C. Business cycles and forecasting. 5th ed. Homewood, Ill.: Irwin, 1961. Pp. xvii, 599. \$10.60.

CHAMBERS, E. J. Economic fluctuations and forecasting. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xv, 649. \$7.50.

GORDON, R. A. Business fluctuations. 2nd ed. New York: Harper, 1961. Pp. xvi, 687. \$7.50

MALANOS, G. J. AND THOMASSEN, H. An econometric model of the American minor cycle. Stud. in bus. and econ. bull. no. 9. Atlanta: Bur. Bus. and Econ. Research, School Bus. Admin., Georgia State College of Bus. Admin., 1960. Pp. 47.

MOORE, G. H., ed. Business cycle indicators. Vol. 1, Contributions to the analysis of current business conditions. Vol. 2, Basic data on cyclical indicators. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1961. Pp. xxxv, 757; xvii, 179. \$12.50, \$4.50, \$15 the set.

PALYI, M. An inflation primer. Inst. philos. and hist. stud., educ. ser. no. 1. Chicago: Henry Regnery Co., 1961. Pp. 150. Written primarily for the general reader.

WERNETTE, J. P. Growth and prosperity without inflation. New York: Ronald Press, 1961. Pp. v, 143. \$3.75.

Employment, growth, and price levels: index to hearings before the Joint Economic Committee, with tables of contents of study papers and staff report, Dec. 30, 1960. Washington: Supt. Docs., 1961, Pp. 97.

January 1961 economic report of the President and the economic situation and outlook. Hearings before the Joint Economic Committee, 87th Cong., 1st sess., Feb. 9, 10, Mar. 6-27, and April 10, 1961. Washington: Supt. Docs., 1961. Pp. viii, 725.

Ocupacion y desocupacion—Gran Santiago, Iquique, Antofagasta, La Serena-Coquimbo, Concepción Diciembre de 1960. Santiago: Inst. de Economía, Univ. de Chile, 1961. Pp. viii, 61.

Report of the Joint Economic Committee on the January 1961 Economic Report of the President with minority and other views, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. iv, 138. 35¢.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

ASCHHEIM, J. Techniques of monetary control. Baltimore: Johns Hopkins Press, 1961. Pp. ix, 164. \$4.50.

ASHTON, R. The crown and the money market, 1603-1640. London: Clarendon Press, 1960. Pp. xvi, 223. 25s.

BOSKEY, S. Bancos de fomento industrial—problemas y políticas. Mexico, D. F.: Centro de Estudios Monetarios Latino-americanos, 1961. Pp. 247.

FOX, S. The era of continuous prosperity—economic control in the free enterprise society. New York: William-Frederick, 1961. Pp. 128. \$3.

GUADAGNINI, R. Il mercato del denaro di New York. Padua: CEDAM, 1960. Pp. viii, 204. L. 2.000.

HARRIS, R., NAYLOR, M. AND SELDON, A. Hire purchase in a free society. 3rd ed. London: Hutchinson for Inst. of Econ. Affairs, 1961. Pp. 319. 30s.

HARRISS, C. L. Money and banking. Boston: Allyn and Bacon, 1961. Pp. xiii, 556. \$7.50.

JOSSA, B. Interesse, moneta e credito. Pub. facolta giuridica Univ. Napoli no. 46. Naples: Eugenio Jovene, 1960. Pp. xii, 343. L. 3.500.

- KENT, R. P. *Money and banking*. 4th ed. New York: Holt, Rinehart and Winston, 1961. Pp. xii, 787. \$7.75.
- LUDTKE, J. B. *The American financial system: markets and institutions*. Boston: Allyn and Bacon, 1961. Pp. xii, 685. \$7.75.
- MANNING DACEY, W. *Money under review*. London: Hutchinson, 1960. Pp. 175. 25s.
- NEIFELD, M. R. *Neifeld's manual on consumer credit*. Easton, Penn.: Mack Pub. Co., 1961. Pp. xi, 592.
- OLIVER, F. R. *The control of hire-purchase*. London: Allen & Unwin, 1961. Pp. 218. 25s.
- PHELPS, C. W. *Commercial credit insurance as a management tool*. Stud. in com. fin., no. 3. Baltimore: Commercial Credit Co., Educational Div., 1961. Pp. vii, 111.
- PRATHER, C. L. *Money and banking*. 7th ed. Homewood, Ill.: Irwin, 1961. Pp. xvi, 629.
- RIST, C. *The triumph of gold*. Transl. from the French and with an introduction by Philip Cortney. New York: Philosoph. Lib., 1961. Pp. 258. \$4.
- A translation of a collection of articles that appeared between 1946 and 1954 in favor of a return to the gold standard.
- SEN, S. N. *Central banking in undeveloped money markets*. 3rd ed. Calcutta: Bookland, 1961. Pp. xi, 294. Rs 20.
- Thesis in partial fulfilment of the Ph.D. degree of the University of London.
- TRIFFIN, R. *Gold and the dollar crisis—the future of convertibility*. Rev. ed. New Haven: Yale Univ. Press, 1961. Pp. xiv, 181. Paper, \$1.45.
- WHITTLESKY, C. R. *Lectures on monetary management*. Univ. of Bombay ser. in monetary and internat. econ. no. 1. Bombay: T. V. Chidambaran; Vora, distrib., 1960. Pp. 89. Rs 5.
- WONNACOTT, P. *The Canadian dollar, 1948-1958*. Canadian stud. in econ. no. 13. Toronto: Univ. of Toronto Press, 1961. Pp. xii, 162. \$3.75.
- Money and credit—their influence on jobs, prices, and growth. The report of the CED Commission on Money and Credit*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xiv, 285. \$3.95; paper, \$2.
- Study of mortgage credit—does the decade 1961-70 pose problems in private housing and mortgage markets which require federal legislation? Recommendations of federal agencies to House Committee on Banking and Currency, 87th Cong., 1st sess.* Washington: Supt. Docs., 1961. Pp. 255.

Public Finance; Fiscal Policy

- BAKER, R. and others. *Taxation and operations abroad*. Tax Institute symposium Dec. 3-4, 1959. Princeton: Tax Institute, 1960. Pp. 308.
- CLAMAGERAN, J.-J. *L'imposta dei tempi romani barbari e feudali in Francia*. Storia della fin. pub. no. 3. Padua: CEDAM, 1961. Pp. xii, 372. L. 4.500.
- Transl. from the French by Sergio Stupan. The original French edition, *Histoire de l'impôt en France*, was published in Paris: Guillaumin, 1867.
- DUBERGÉ, J. *La psychologie sociale de l'impôt dans la France d'aujourd'hui*. Paris: Presses Univ. de France, 1961. Pp. vii, 230. NF 10.
- EISENSTEIN, L. *The ideologies of taxation*. New York: Ronald Press, 1961. Pp. vii, 263. \$5.
- GRUNEWALD, A. E. *Stock valuation in federal taxation*. Occas. paper no. 4. East Lansing: Bur. Bus. and Econ. Research, Grad. School Bus. Admin., Michigan State Univ., 1961. Pp. 104. \$1.
- HAQ, M. WITH K. KHANAM. *Deficit financing in Pakistan 1951-60*. Monogr. in econ. develop. no. 3. Karachi: Inst. Development Econ., 1961. Pp. 68.
- JASKARI, O. V. *A study in the theory of incidence of taxation*. Helsinki: Finnish Acad. of Sci. and Letters, 1960. Pp. 116. Fmk. 550.
- KULLMER, L. *Die Ehegattenbesteuerung. Ihre Geschichte, Problematik und Neuregelung in Deutschland, diskutiert unter Berücksichtigung der Erfahrungen in den USA*. Frank-

- furter wissenschaftliche Beiträge Rechts- und Wirtschaftswissenschaftliche Reihe, Vol. 20. Frankfurt am Main, 1960. Pp. 133.
- REUBER, G. L. AND WONNACOTT, R. J. The cost of capital in Canada—with special reference to public development of the Columbia River. Washington: Resources for the Future, 1961. Pp. ix, 101. Paper, \$1.50.
- ROLPH, E. R. AND BREAK, G. F. Public finance. New York: Ronald Press, 1961. Pp. viii, 586. \$7.50.
- SMITH, D. T. Federal tax reform—the issues and a program. New York: McGraw-Hill, 1961. Pp. viii, 328. \$7.
- STOCKFISCH, J. A. A study of California's tax treatment of manufacturing industry—a report submitted to the State of California Economic Development Agency. Sacramento: State of Calif., Docs. Section, 1961. \$4.
- ZUBROW, R. A., DECKER, R. L. AND PLANK, E. H. Financing state and local government in Nevada. Carson City: Nevada Legislative Tax Stud. Group, State Printing Office, 1960. Pp. 695.
- The federal revenue system: facts and problems. Materials assembled by the staff of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 290.
- Le finanze pubbliche dei sei paesi della C.E.E. nel 1959. Rome: Assoc. fra le Società Italiane per Azioni, 1960. Pp. 156.
- Growth and taxes—steps for 1961. CED statement on nat. policy. Washington: Com. for Econ. Develop., 1961. Pp. 38.
- Internal revenue acts, beginning 1954—text of acts and legislative history with tables and index. St. Paul: West Pub. Co., 1961. Pp. 1658.
- Investment of idle cash balances by state and local governments. Commission on Intergovernmental Relations. Washington: Supt. Docs., 1961. Pp. 61.
- Long range budgeting and planning: selected readings. Washington: Bur. Budget, 1961. Pp. 4.
- President's tax message, along with principal statement, detailed explanation, and supporting exhibits and documents submitted by Secretary of the Treasury Douglas Dillon. Hearings before the House Committee on Ways and Means, May 3, 1961. Washington: Supt. Docs., 1961. Pp. 295.
- Taxation and private investment. New Delhi: Nat. Council Applied Econ. Research, 1961. Pp. xi, 120. \$2.50.
- The findings and recommendations of the study are primarily concerned with the effects of the tax system of India on private investment.

International Economics

- ASHER, R. E. Grants, loans, and local currencies—their role in foreign aid. Washington: Brookings Inst., 1961. Pp. xii, 142. \$2.50; paper, \$1.50.
- BENOIT, E. Europe at sixes and sevens—the Common Market, the Free Trade Association, and the United States. New York: Columbia Univ. Press, 1961. Pp. xxi, 275. \$5.
- BUSSCHAU, W. J. Gold and international liquidity—the flow of credit in relation to gold in the international monetary system. Johannesburg: South African Inst. of Internat. Affairs, Jan Smuts House, 1961. Pp. 102. R 1.
- This is a series of lectures which the author delivered in Luxembourg in September 1960 at the International University of Comparative Sciences. The lectures present the case for raising the price of gold.
- DA COSTA ANDRE, J. L. Portugal na Associação Europeia de Comercio Livre. Lisbon: Gabinete de Investigações Econ., Inst. Superior de Ciencias Econ. e Fin., 1960, Pp. 98.
- EMMINGER, O. Die Herrschaft der Schlagworte in der jüngsten währungspolitischen Diskussion. Kieler stud. n.s. no. 17. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. 24.
- FRANCE, B. IBM in France. U.S. Bus. Performance Abroad case stud., 10. Washington: Nat. Planning Assoc., 1961. Pp. x, 86. \$1.

- FRANK, I. The European common market—an analysis of commercial policy. New York: Praeger, 1961. Pp. 324. \$8.50.
- FRIEDMANN, W. G. AND KALMANOFF, G., ed. Joint international business ventures. New York: Columbia Univ. Press, 1961. Pp. xi, 558. \$15.
- GOODMAN, B. Industrial materials in Canadian American relations. Detroit: Wayne State Univ. Press, 1961. Pp. xvii, 217. \$7.
- GOWDA, K. V. Appreciation of the Indian rupee—a study in international monetary mechanism. Allahabad: Chaitanya, 1961. Pp. xii, 269. \$4.
- GURTOO, D. H. N. India's balance of payments 1920-1960. Delhi: S. Chand, 1961. Pp. xvi, 241. Rs 15.
- JANSSEN, L. H. Free trade, protection and customs union. Leiden: H. E. Stenfert Kroese, 1961. Pp. viii, 157, f 20.
- KARREMAN, H. F. Methods for improving world transportation accounts, applied to 1950-1953. Tech. paper 15. New York: Nat. Bur. of Econ. Research, 1961. Pp. xvii, 121. \$1.50.
- KOVNER, M. The challenge of coexistence—a study of Soviet economic diplomacy. Washington: Public Affairs Press, 1961. Pp. vi, 130. \$3.25.
- MCKINNEY, R. Review of the international atomic policies and programs of the United States—report to the Joint Committee on Atomic Energy. 86th Cong., 2nd sess. 5 vol. Washington: Supt. Docs., 1960.
- MINTZ, I. American exports during business cycles, 1879-1958. Occas. paper 76. New York: Nat. Bur. Econ. Research, 1961. Pp. xli, 92. \$1.
- MORLEY, L. AND MORLEY, F. The patchwork history of foreign aid. Washington: American Enterprise Assoc., 1961. Pp. v, 55. \$1.
- NURKSE, R. Equilibrium and growth in the world economy. Ed. by G. Haberler and R. M. Stern. Cambridge: Harvard Univ. Press, 1961. Pp. xiii, 380. \$7.50.
- SHERNSHNEV, E. S. Federativnaya respublika germanii. *Ekonomika i vneshniaia trgovlia*. (Federated Republic of Germany, economic and foreign trade.) Moscow: Pub. House for For. Trade, 1960. Pp. 186.
- TISCHENDORF, A. Great Britain and Mexico in the era of Porfirio Díaz. Durham, N.C.: Duke Univ. Press, 1961. Pp. xii, 197. \$5.
- VINTSER, Y. I. *Angliskie kapitalovlozhenia za granitsei v period imperialisma*. (British capital investments abroad in the period of imperialism.) Moscow: Pub. House of Inst. Internat. Rel., 1960. Pp. 791.
- ZOLOTAS, X. The problem of the international monetary liquidity—report to the International Monetary Fund. Bank of Greece papers and lectures no. 6. Athens: Bank of Greece, 1961. Pp. 15.
- Basic instruments and selected documents. 9th suppl. Decisions, reports, etc., of the 16th and 17th sess. New York: Internat. Doc. Svce, Columbia Univ. Press for General Agreement on Tariffs and Trade, Geneva, 1961. Pp. 268. \$3.50.
- Cooperation for progress in Latin America—a statement on national policy by the Research and Policy Committee of the Committee for Economic Development. New York: Com. for Econ. Develop., 1961. Pp. 56. \$1.
- Études sur les problèmes économiques de l'Europe. Colloques économiques Franco-Britanniques—Cahiers I.S.E.A. no. 108, sér. H.S. no. 5. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 199.
- With contributions by: A. C. L. Day, A. E. Nivollet, M. Byé, R. Bailey, B. Tew, J. Denizet, J. Knapp, M. F. G. Scott, G. de Bernis, J. Parent and W. Hagenbuch.
- Inter-American programs for 1961—denial of 1962 budget information. Hearings before the Subcommittee of the House Committee on Appropriations, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 354.
- International aspects of regional economy problems. First International Congress on Regional Economy, Sept. 1-12, 1958. Brussels: Ed. de l'Inst. de Soc. Solvay. Pp. 532. Bfr. 450.

Reports published in original language followed by summaries in English, French or Dutch.

International organizations in the social sciences—a summary description of the structure and activities of non-governmental organizations in consultative relationship with UNESCO and specialized in the social sciences. Rev. ed. UNESCO Rept. and papers in the soc. sci. no. 13. New York: Internat. Doc. Svce., Columbia Univ. Press, 1961, Pp. 145.

The international position of the dollar. CED statement on nat. pol. New York: Com. for Econ. Develop., 1961. Pp. 70. \$1.

Meeting foreign competition at home and abroad—proceedings of the first 1961 Economic Institute February 15, 1961. Washington: Chamber of Commerce of the U.S., 1961. Pp. 74. \$1.

Addresses by: G. Haberler, T. Perutz, N. T. Ness, R. E. Smiley, J. E. Spears, G. Donat and W. Blackie. E. D. Canham, moderator.

Organization for Economic Cooperation and Development. Hearings before the Senate Committee on Foreign Relations, 87th Cong., 1st sess., Feb. 14, 15, Mar. 1 and 6, 1961. Washington: Supt. Docs., 1961. Pp. 316.

Selected references on industrial development. Washington: Tech. Aids Branch, Office of Indus. Resources, Internat. Coop. Admin., 1961. Pp. 140.

Small business exports and the world market—report on encouragement and expansion of exports by small business. Senate Committee on Small Business, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 42.

Small business exports and the world market—1960. Hearings before the Senate Select Committee on Small Business, 86th Cong., 2nd sess. New York City, New Orleans, San Francisco, Nov.-Dec., 1960. Washington: Supt. Docs., 1961. Pp. 457.

Solving foreign business problems—case studies of 100 companies. 1961 ed. New York: Bus. Internat., 1961. Pp. 129. \$30, non-subscribers.

Les tâches prochaines de l'Europe—discours prononcés à la IV^e Conférence internationale de la L.E.C.E., liste des participants et synthèse des échanges de vues. Brussels Oct. 20-22, 1960. L.E.C.E. pub. no. 32. Brussels: Ligue Européenne de Co-op. Écon., 1960. Pp. 69.

Tarifs douaniers et échanges commerciaux en Europe occidentale. P.E.P. stud., Cahiers I.S.E.A., no. 105, sér. R., no. 5. Paris: Inst. Sci. Écon. Appliquée, 1960. Pp. xxiii, 128.

Technical assistance programs of the United Nations. Washington: Dept. of State, Bur. Intelligence and Research, 1961. Pp. 55.

The United States and world trade—challenges and opportunities. Final report, Senate Committee on Interstate and Foreign Commerce, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 309.

Business Finance; Investment and Security Markets; Insurance

CENTER, C. C. AND HEINS, R. M., ed. Insurance and government. Insurance ser. vol. 2. No. 1, The economics and principles of insurance supervision. No. 2, Concentration or deconcentration in the life insurance business. No. 3, Liquidations of insurance companies. No. 4, Rate regulation revisited. No. 5, Health insurance and social policy. Symposium, Univ. of Wisconsin, Sept. 19-20, 1960. Madison: University of Wisconsin, School of Commerce, Bur. Bus. Research and Svce., 1960. Pp. x, 89; viii, 94; ix, 85; ix, 143; vii, 39.

COHAN, A. B. Cost of flotation of long-term corporate debt since 1935. Research paper 6. Chapel Hill: School of Bus. Admin., Univ. of North Carolina, 1961. Pp. xiii, 89. \$2.

———. Private placements and public offerings: market shares since 1935. Tech. paper 1. Chapel Hill: School of Bus. Admin., Univ. of North Carolina, 1961. Pp. ix, 47. \$1.

DAVIS, J. P. Corporations—a study of the origin and development of great business combinations and of their relation to the authority of the state. New York: Capricorn Books, 1961. Pp. xix, 280. Paper, \$2.45.

First published in 1905 (New York: Putnam's, 2 vol.). This present reprint has a new introduction by Abram Chayes.

DOWRIE, G. W., FULLER, D. R. AND CALKINS, F. J. *Investments*. 3rd ed. New York: Wiley, 1961. Pp. viii, 561. \$9.

HOOLEY, R. W. *Financing the natural gas industry—the role of life insurance investment policies*. New York: Columbia Univ. Press, 1961. Pp. x, 218. \$6.50.

JASKARI, O. V. *Depreciation allowances and the real capital*. Helsinki: Finnish Acad. of Sci. and Letters, 1960. Pp. 68. Fmk. 340.

PUGH, O. S. *Financing 689 small business firms in South Carolina, 1958-1959—a study of the sources, availability and terms of financing for small business firms in South Carolina*. Washington: School Bus. Admin., Univ. of South Carolina, for Small Bus. Admin., 1960. Pp. x, 136.

WESSEL, R. H. *Principles of financial analysis: a study of financial management—text with cases*. New York: Macmillan, 1961. Pp. viii, 376. \$7.50.

Finansy predpriyatii i otrasley narodnogo khosiaistva. (Finances of enterprises and branches of the national economy.) Moscow: Pub. House for Fin. Lit., 1960. Pp. 576.

Formación de capital en las empresas industriales—with English summary. Santiago: Inst. de Economía, Univ. de Chile, 1961. Pp. xxvi, 269.

Business Organization; Managerial Economics; Marketing; Accounting

ACKOFF, R. L., ed. *Progress in operations research*. Vol. 1. Operations Research Society of America pub. no. 5. New York: Wiley, 1961. Pp. xii, 505. \$11.50.

BEAUMONT, R. A. AND TOWER, J. W. *Executive retirement and effective management*. Monogr. no. 20. New York: Indus. Relations Counselors, 1961. Pp. viii, 248. \$7.50.

BELL, H. F. AND MOSCARELLO, L. C. *Retail merchandise accounting*. 3rd ed. New York: Ronald Press, 1961. Pp. xi, 487. \$12.50.

BIERMAN, H., JR., FOURAKER, L. E., AND JAEDICKE, R. K. *Quantitative analysis for business decisions*. Homewood, Ill.: Irwin, 1961. Pp. xi, 358.

BOWMAN, E. H. AND FETTER, R. B. *Analysis for production management*. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xiii, 562. \$8.75.

BUFFA, E. S. *Modern production management*. New York: John Wiley, 1961. Pp. x, 636. \$10.25.

BUSKIRK, R. H. *Principles of marketing—the management view*. New York: Holt, Rinehart and Winston, 1961. Pp. xxii, 647.

CHACKO, G. K. *International trade aspects of Indian burlap—an econometric study*. New York: Bookman, 1961. Pp. 226. \$10.

CORDEN, W. M. *A tax on advertising?* Research ser. 222. London: Fabian Society, 1961. Pp. 40. 4s.

DAVIS, K. R. *Marketing management*. New York: Ronald Press, 1961. Pp. xi, 824. \$8. Instructor's manual prepared to accompany text.

DELEPORTRIE-SOUBEYROUX, N. *Les dirigeants de l'industrie française. Recherches l'écon. française* no. 6. Fond. Nat. Sci. Pol. Paris: A. Colin, 1961. Pp. 280.

ENTENBERG, R. D. *The changing competitive position of department stores in the United States by merchandise lines—a new approach to more productive retail distribution*. Rev. ed. Pittsburgh: Univ. of Pittsburgh Press, 1961. Pp. xvi, 196.

FREY, A. W. *Advertising*. 3rd ed. New York: Ronald Press, 1961. Pp. viii, 600. \$7.50. Instructor's manual prepared to accompany text.

HASTINGS, P. G. *Fundamentals of business enterprise*. Princeton: D. Van Nostrand, 1961. Pp. xiii, 641. \$6.95.

HAYNES, W. W. AND MASSIE, J. L. *Management—analysis, concepts and cases*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xv, 526.

- KARRENBROCK, W. E. AND SIMONS, H. Advanced accounting—comprehensive volume. 3rd ed. Cincinnati: South-Western, 1961. Pp. x, 965. \$7.95.
- LINDFORS, G. V., comp. Intercollegiate bibliography: cases in business administration—selected cases from vol. I, II, III, and IV. Boston: Intercollegiate Case Clearing House, for Intercollegiate Contributors and the American Assoc. of Collegiate Schools of Bus., 1961. Pp. xii, 114.
- LITTLETON, A. C. Essays on accountancy. Urbana: Univ. of Illinois Press, 1961. Pp. xi, 637. \$10.
- LYNCH, P. AND VAIZEY, J. Guinness's brewery in the Irish economy. London: Cambridge Univ. Press, 1960. Pp. viii, 278. 35s.
- MARTIN, E. W., JR., Electronic data processing—an introduction. Homewood, Ill.: Irwin, 1961. Pp. xiii, 423. \$7.95.
- MAUSER, F. F. Modern marketing management—an integrated approach. New York: McGraw-Hill, 1961. Pp. xiii, 502. \$7.95.
- MEIJ, J. L., ed. Depreciation and replacement policy. Chicago: Quadrangle Books; Amsterdam: North-Holland, 1961. Pp. xii, 235. \$7.50.
- MILROY, R. R., WALDEN, R. E. AND SEAWELL, L. V. Accounting theory and practice—advanced. Cambridge: Houghton Mifflin, 1961. Pp. xi, 673. \$7.95.
- MUELLER, W. F. AND GAROIAN, L. Changes in the market structure of grocery retailing. Madison: Univ. of Wisconsin Press, 1961. Pp. xv, 215. \$6.
- MYER, J. N. Financial statement analysis—principles and technique. 3rd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xii, 276.
- NELSON, O. S. AND WOODS, R. S. Accounting systems and data processing. Cincinnati: South-Western, 1961. Pp. xii, 643. \$8.
- NEWMAN, W. H. AND SUMMER, C. E., JR. The process of management—concepts, behavior, and practice. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xii, 675. \$7.95.
- NOBLE, H. S. AND NISWONGER, C. R. Accounting principles. 8th ed. Cincinnati: South-Western, 1961. Pp. x, 786. \$7.
- REVZAN, D. A. Wholesaling in marketing organization. New York: John Wiley, 1961. Pp. xv, 656. \$10.50.
- RIMMER, W. G. Marshall's of Leeds, flax-spinners 1788-1886. London: Cambridge Univ. Press, 1960. Pp. xiii, 342. 42s.
- SCHRIEBER, A. N., MARCUS, S., SUTERMEISTER, R. A. AND BROWN, E. G. Defense procurement and small business—a survey of practices and opinions of small business firms selling to defense programs. Seattle: Univ. of Washington Press, 1961. Pp. xi, 134. \$3.75.
- SHUBIN, J. A. Managerial and industrial economics. New York: Ronald Press, 1961. Pp. vii, 518. \$7.50.
- WALTON, R. E. The impact of the professional engineering union—a study of collective bargaining among engineers and scientists and its significance for management. Boston: Div. of Research, Grad. School of Bus. Admin., Harvard Univ., 1961. Pp. xiii, 419. \$5.
- WILSON, R. E. Two hundred precious metal years—a history of the Sheffield Company Limited 1760-1960. London: Ernest Benn, 1960. Pp. xxii, 316. 63s.
- Kobe University Business Review—11th annual report. In Japanese. Kobe: Research Inst. for Econ. and Bus. Admin., Kobe University, 1961. Pp. 300.

Industrial Organization; Government and Business; Industry Studies

- ADAMS, W., ed. The structure of American industry—some case studies. 3rd ed. New York: Macmillan, 1961. Pp. vi, 603.
- COTTER, C. P. Government and private enterprise. New York: Holt, Rinehart and Winston, 1960. Pp. 527.
- DUNNING, J. H. AND THOMAS, C. J. British industry: change and development in the Twentieth Century. London: Hutchinson, 1961. Pp. 232. 30s.

- FELDMAN, E. *Fit for men: a study of New York's clothing trade*. Washington: Public Affairs Press, 1960. Pp. vii, 138. \$3.25.
- HAX, H. *Vertikale Preisbindung in der Markenartikelindustrie*. Cologne: Westdeutscher Verlag, 1961. Pp. ix, 210. DM 18.50.
- LEHBERT, B. *Die Entwicklung der Stahlwirtschaft in den Vereinigten Staaten von Amerika und in der Sowjetunion*. Kieler stud. no. 57. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. vii, 200. DM 25.
- POPPER, K. R. *The poverty of historicism*. London: Routledge & Kegan Paul, 1957, reprinted 1960. Pp. xi, 166. 16s.
- REDFORD, E. S. *The President and the regulatory commissions*. [Washington]: 1960. Pp. 33. Report prepared for the President's Advisory Com. on Government Organization. This committee was abolished Feb. 10, 1961, by executive order.
- REUSSE, C., KOUTNY, E. AND TYCHON, L. *Le progrès économique en sidérurgie: Belgique, Luxembourg, Pays-Bas 1830-1955*. Louvain: Nauwelaerts, 1960. Pp. 461. Bfr. 475.
- ROBERTSON, D. AND DENNISON, S. R. *The control of industry*. Welwyn: Nisbet; London: Cambridge Univ. Press, 1960. Pp. xiv, 162. 10s 6d.
- SCHLESINGER, J. R. *The political economy of national security*. London: Stevens, 1960. Pp. 292. 35s.
- WILLOUGHBY, W. R. *The St. Lawrence Waterway—a study in politics and diplomacy*. Madison: Univ. of Wisconsin Press, 1961. Pp. xiv, 381. \$6.
- Antitrust and monopoly activities, 1960. Report by the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. 78.
- Common ownership by regulated carriers. Hearing before the Surface Transportation Subcommittee of the Senate Committee on Interstate and Foreign Commerce, 86th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 134.
- Comparative fabric production costs in the United States and four other countries. Prepared by staff of Surveys and Research Corp. for Bus. and Defense Services Admin., Dept of Commerce. Washington: Supt. Docs., 1961. Pp. vi, 59. 40¢.
- Inventories in the textile cycle. Washington: Supt. Docs., 1961. Pp. viii, 67. 45¢.
- Leisure and work clothing—trends and outlook. Washington: Supt. Docs., 1961. Pp. v, 29. 25¢.
- National fair trade legislation—1959. Hearings before a special Senate Subcommittee on Fair Trade of the Committee on Interstate and Foreign Commerce, 86th Cong., 1st sess., June 15, 16 and July 10, 1959. Washington: Supt. Docs., 1961. Pp. 638.
- Problems of the domestic textile industry. Hearings before the Special Subcommittee to Study the Textile Industry of the Senate Committee on Interstate and Foreign Commerce, 87th Cong., 1st sess., Feb. 6 and 7, 1961. Supplementary report. Washington: Supt. Docs., 1961. Pp. 577; 22.
- Statistics of manufacturing industries—fabricated metal products: I. New York: Nat. Indus. Conf. Board, 1961. Pp. 43. \$2.50 Associates, \$12.50 non-Associates.
- The U. S. industrial outlook for 1961—91 selected industries. Bus. and Defense Svce. Admin. pub. Washington: Supt. Docs., 1961. Pp. 262.
- Land Economics; Agricultural Economics; Economic Geography; Housing**
- BELLERBY, J. R. AND MUJUMDAR, N. A. *Agricultural economic theory and the Indian economy*. Bombay: Vora, 1961. Pp. 158. 17s 6d.
- BOWLEY, M. *Innovations in building materials—an economic study*. London: Duckworth, 1960. Pp. 446. 70s.
- ESTALL, R. C. AND BUCHANAN, R. O. *Industrial activity and economic geography—a study of the forces behind the geographical location of productive activity in manufacturing industry*. London: Hutchinson Univ. Library, 1961. Pp. 232. 12s 6d.
- FLORES, E. *Tratado de economía agrícola*. Mexico: Fondo de Cultura Econ., 1961. Pp. 442.

- GUTHRIE, J. A. AND ARMSTRONG, G. R. Western forest industry—an economic outlook. Baltimore: Johns Hopkins Press for Resources for the Future, 1961. Pp. xxvi, 324. \$6.50.
- HEADY, E. O. AND DILLON, J. L. Agricultural production functions. Ames: Iowa State Univ. Press, 1961. Pp. viii, 667. \$6.95.
- HIGHSMITH, R. M., JR., ed. Case studies in world geography: occupance and economy types. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. vi, 218. \$3.95.
- JAWETZ, M. B. The joint production function of starch equivalent and protein equivalent in feeding dairy cows. Aberystwyth: Univ. College of Wales, Dept. of Agric. Econ., 1961. Pp. 121. 10s.
- LITINSKY, E. E. Das Problem des niedrigen Einkommens in der Landwirtschaft der Vereinigten Staaten von Nordamerika. *Berichte über Landwirtschaft* spec. issue 174. Hamburg: Paul Parey, 1960. Pp. 99. DM 10.50.
- MANNING, P. A history of the national investigation into the economics of milk production 1934-1951. Oxford: Agric. Econ. Research Inst., Univ. of Oxford, 1960. Pp. 83. 12s 6d.
- MARNATA, F. Les loyers des bourgeois de Paris 1860-1958. *Recherches l'écon. française* no. 5, Fond. Nat. Sci. Pol. Paris: A. Colin, 1961. Pp. ix, 117.
- RATCLIFF, R. U. Real estate analysis. New York: McGraw-Hill, 1961. Pp. vii, 342. \$7.50.
- RODWIN, L., ed. The future metropolis. New York: George Braziller, 1961. Pp. 253. \$5. Essays originally published in *Daedalus*, winter 1961.
- SHAH, C. H. Conditions of economic progress of farmers—an analysis of thirty-six case studies. Bombay: Indian Soc. Agric. Econ., 1960. Rs 5.
- SMITH, M. G. AND CHRISTIAN, C. F., ed. Adjustments in agriculture—a national basebook. Ames: Iowa State Univ. Press, 1961. Pp. xvii, 376. \$3.95.
- SRIVASTAVA, R. S. Agricultural marketing in India and abroad. Bombay: Vora, 1960. Pp. 243. Rs 12.50.
- WINGO, L., JR. Transportation and urban land. Washington: Resources for the Future, 1961. Pp. viii, 132. Paper, \$2.
- Economic aspects of fuel and power in British industry. Manchester: Manchester Univ. Press for Manchester Joint Research Council, 1960. Pp. viii, 217. 25s.
- Housing Legislation of 1961. Hearings before a subcommittee of the Senate Committee on Banking and Currency, 87th Cong., 1st sess., April 4-20, 1961. Washington: Supt. Docs., 1961. Pp. 1049.
- Land Economics Institute, University of Illinois, 1958. Modern land policy—papers. Urbana: Univ. of Illinois Press, 1960. Pp. 449.
- Proceedings of the Tenth International Conference of Agricultural Economists. London: Oxford Univ. Press, 1960. Pp. xii, 535. 42s.
- Report together with supplemental and individual views of the Senate Select Committee on National Water Resources, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 147.
- Review of federal housing programs. Appendix to Housing legislation of 1961, Senate Committee on Banking and Currency. Washington: Supt. Docs., 1961. Pp. 153.
- Special feed grain program for 1961. Hearing before the Senate Committee on Agriculture and Forestry, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 135.

Labor Economics

- AARON, B. Legal status of employee benefit rights under private pension plans. Homewood, Ill.: Richard D. Irwin for Pension Research Council, Wharton School of Finance and Commerce, Univ. of Pennsylvania, 1961. Pp. xiii, 130. \$5.
- ANTON, F. R. Government supervised strike votes. Toronto: CCH Canadian Ltd., [1961]. Pp. xi, 190. \$9.

- BAUM, S. The labor force of Rumania. Bur. Census, Internat. pop. stat. rept., ser. P-90, no. 14. Washington: Supt. Docs., 1961. Pp. ii, 33. 25¢.
- BENDIX, R. Max Weber—an intellectual portrait. London: Heinemann, 1960. Pp. xi, 480. 30s.
- BUTLER, A. D. Labor economics and institutions. New York: Macmillan, 1961. Pp. xxi, 595. \$6.50.
- DEMPSEY, J. R. The operation of the right-to-work laws—a comparison between what the state legislatures say about the meaning of the laws and how state court judges have applied these laws. Milwaukee, Marquette Univ. Press, 1961. Pp. 136.
- EVANS, H. Governmental regulation of industrial relations—a comparative study of United States and British experience. Ithaca: N.Y. State School of Indus. and Lab. Rel., Cornell Univ., 1961. Pp. vii, 116. \$2.50.
- FOGARTY, M. The just wage. London: Geoffrey Chapman, 1961. Pp. 309. 30s.
The author examines the relation between British decisions on wages and salaries and the doctrine of the just wage, the modern version of which has evolved "from the common sense of employers, employees, and governments, focused and developed by social theorists. . . ."
- GALENSON, W. Trade union democracy in Western Europe. Berkeley: Univ. of California Press, 1961. Pp. xv, 97. \$2.25.
- KOLODRUBETZ, W. W. AND LEVIN, H. L. Pension plans under collective bargaining—normal retirement, early, and disability retirement, fall 1959. Bur. Lab. Stat. pub. Washington: Supt. Docs., 1961. Pp. 54.
- LIVI, L., BARTOLI, H., PARENT, J. AND GOUT, A. Économie du travail. Cahiers I.S.E.A., no. 107 ser. AB, no. 1. Paris: Inst. Sci. Econ. Appliquée, 1960. Pp. 147.
- PHELPS, O. W. Introduction to labor economics. 3rd ed. New York: McGraw-Hill, 1961. Pp. xiv, 566. \$7.50.
- PILCH, M. AND WOOD, V. Pension schemes. New York: Humanities Press, 1960. Pp. 222. \$8.
- REZLER, J. Union growth reconsidered—a critical analysis of recent growth theories. New York: Kossuth Foundation, 1961. Pp. iv, 32.
- SELLIER, F. Stratégie de la lutte sociale—France 1936-1960. Paris: Ed. Ouvrières, 1961. Pp. 349. NF 18.60.
- SIMLER, N. J. The impact of unionism on wage-income ratios in the manufacturing sector of the economy. Univ. of Minnesota stud. in econ. and bus. no. 22. Minneapolis: Univ. of Minnesota Press, 1961. Pp. iii, 71. \$1.75.
- STIEBER, J. The steel industry wage structure—a study of the joint union-management job evaluation program in the basic steel industry. Cambridge: Harvard Univ. Press, 1959. Pp. xxiii, 380. \$8.
- TAYLOR, A. G. Labor and the Supreme Court. 2nd ed. Ann Arbor: Braun-Brumfield, 1961. Pp. ix, 205. \$2.50.
- TRIPP, L. R. Labor problems and processes—a survey. New York: Harper, 1961. Pp. xviii, 510. \$6.
- WEITZMAN, M. S. and ELIAS, A. The magnitude and distribution of civilian employment in the U.S.S.R.: 1928-1959. Bur. Census Internat. pop. rept. ser. P-95, no 58. Washington: Bur. Census, Dept. of Commerce, 1961. Pp. 193.
- To amend the Fair Labor Standards act. Hearings before the Special Subcommittee on Labor of the House Committee on Education and Labor, 87th Cong., 1st sess., Feb. 17-24, 1961. Washington: Supt. Docs., 1961. Pp. 637.
- Amendments to the Fair Labor Standards act. Hearings before the Subcommittee on Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 752.
- The cost of social security 1949-1957. Geneva: Internat. Lab. Office, 1961. Pp. viii, 238. \$3.
- Emergency disputes—a national labor policy problem. Memo no. 138. New York: Indus. Rel. Counselors, 1961. Pp. 41. \$1.50.

- Extension of Mexican farm labor program. Hearings before the Subcommittee on Equipment, Supplies, and Manpower of the House Committee on Agriculture, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 370.
- Fair labor standards amendments of 1961. Report together with minority views by the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 111.
- A joint statement on the rise of chronic unemployment. Washington: Nat. Planning Assoc., 1961. Pp. 45.
- New 1961 minimum wage law with explanation—"Fair Labor Standards Act with 1961 amendments." Chicago: Commerce Clearing House, 1961. Pp. 128. \$2.
- A survey of changes in wages and personnel practices among nurses in the Buffalo area 1955-1960. Buffalo: Econ. Dept., D'Youville College, 1961. Pp. 24.
- Trends in employee benefits—an analysis of relevant issues. Memo 137. New York: Indus. Relations Counselors, 1961. Pp. 29. \$1.50.

Population; Welfare Programs; Consumer Economics

- AGARWALA, A. N. Insurance in India—a study of insurance aspect of social security in India. Allahabad: Allahabad Law Journal Press, [1960]. Pp. xviii, 628.
- BENSON, C. S. The economics of public education. Boston: Houghton Mifflin, 1961. Pp. xx, 580. \$7.
- DONALDSON, E. F. AND PFAHL, J. K. Personal finance. 3rd ed. New York: Ronald Press, 1961. Pp. vii, 717. \$7.50.
- Instructor's manual prepared to accompany text.
- GREENEUT, M. L. Full employment, inflation and common stock. Washington: Public Affairs Press, 1961. Pp. vi, 87. \$3.25.
- HARRIS, S. E. More resources for education. John Dewey Soc. lectureship ser. no. 3. New York: Harper, 1960. Pp. 86.
- HAUSER, P. M. Population perspectives. New Brunswick, N.J.: Rutgers Univ. Press, 1960. Pp. 183. \$3.50.
- KAHN, G. Current expenditures per pupil in public school systems—urban school systems, 1958-59. Dept. of Health, Education and Welfare circular no. 645. Washington: Supt. Docs., 1961. Pp. v, 82. 50¢.
- LUNDSTEDT, S., ed. Consumer behavior in 1961—a summary report. Ann Arbor: Foundation for Research on Human Behavior, 1961. Pp. 38. \$1.
- REINHARD, M. R. AND ARMENGAUD, A. Histoire générale de la population mondiale. Paris: Ed. Montchrestien, 1961. Pp. v, 597. NF 50.
- SOMERS, H. M. AND SOMERS, A. R. Doctors, patients, and health insurance—the organization and financing of medical care. Washington: Brookings Inst. 1961. Pp. xix, 576. \$7.50.
- Comparison of state unemployment insurance laws as of Jan. 1, 1960. Unemployment Insurance Svce. pub. Washington: Supt. Docs., 1960. Pp. 148.
- Economic survey data—basic data available to academic researchers. Ann Arbor: Econ. Behavior Program, Survey Research Center, Inst. for Soc. Research, Univ. of Michigan, 1960. Pp. 60.
- The population of Sudan—report on the sixth annual conference, Univ. of Khartoum, January 16 & 17, 1958. Khartoum: Philosophical Society of Sudan in conjunction with the Dept. of Stat., Gov. of the Repub. of Sudan, 1958. Pp. 110.
- 1960 Survey of consumer finances. Ann Arbor: Survey Research Center, Inst. for Soc. Research, Univ. of Michigan, 1961. Pp. xxii, 310. \$7.50.

Related Disciplines

- ANDERSON, R. A. AND KUMPF, W. A. Business law. 6th ed. Cincinnati: South-Western, 1961. Pp. xii, 948.

- BENSON, L. The concept of Jacksonian Democracy: New York as a test case. Princeton: Princeton Univ. Press, 1961. Pp. xi, 351. \$6.
- BOULDING, K. E. The image—knowledge in life and society. Ann Arbor: Ann Arbor Paperbacks, Univ. of Michigan Press, 1961 (originally published 1956). Pp. 175. \$1.65.
- BURGESS, E. W., ed. Retirement villages. Ann Arbor: Div. of Gerontology, Univ. of Michigan, 1961. Pp. 156. \$3.50.
- ERASMUS, C. J. Man takes control—cultural development and American aid. Minneapolis: Univ. of Minnesota Press, 1961. Pp. viii, 365. \$6.50.
- ETZIONI, A. Complex organizations—a sociological reader. New York: Holt, Rinehart and Winston, 1961. Pp. xiv, 497. \$6.75.
- FABRICANT, S. Towards a firmer basis of economic policy. Forty-first annual report—a record for 1960 and plans for 1961. New York: Nat. Bur. of Econ. Research, 1961. Pp. ix, 85.
- GARDNER, R. L. How to make money in the commodity market. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. ix, 194. \$4.95.
- GERTH, H. H. and MILLS, C. W., transl. and ed. From Max Weber: essays in sociology. New York: Oxford Univ. Press, 1958. Pp. xi, 490. Paper, \$2.25. First pub. 1946.
- HADLEY, G. Linear algebra. Reading, Mass.: Addison-Wesley, 1961. Pp. ix, 290. \$6.75. The author says in his preface that the book is designed for those in fields other than mathematics, such as engineering, economics, and operations research. It is intended to be used by "those with a limited mathematical background."
- HUNT, E. F. and KARLIN, J. Society today and tomorrow—readings in social science. New York: Macmillan, 1961. Pp. xvi, 507. Paper, \$3.95.
- JOHNSTON, E. G., ed. Preserving human values in an age of technology. Franklin Memorial Lectures, vol. 9. Detroit: Wayne State Univ. Press, 1961. Pp. viii, 132. \$4.
- MILLER, H. S. The legal foundations of American philanthropy 1776-1844. Madison: State Hist. Soc. of Wisconsin, 1961. Pp. xiii, 71. \$3.
- MILLER, R. C., ed. Twentieth-Century pessimism and the American dream. Franklin Memorial Lectures, vol. 8. Detroit: Wayne State Univ. Press, 1961. Pp. ix, 104. \$3.50.
- NILAND, P. Management problems in the acquisition of special automatic equipment. Boston: Div. Research, Grad. School Bus. Admin., Harvard Univ., 1961. Pp. xiv, 336. \$5.
- ORCUTT, G. H., GREENBERGER, M., KORBEL, J. and RIVLIN, A. M. Microanalysis of socio-economic systems: a simulation study. New York: Harper, 1961. Pp. xviii, 425. \$8.
- POLAK, F. L. The image of the future—enlightening the past, orientating the present, forecasting the future. Vol. 1, The promised land, source of living culture. Vol. 2, Iconoclasm of the images of the future, demolition of culture. European aspects, ser. A, no. 1. New York: Oceana: Leyden: A. W. Sythoff, 1961. Pp. 456; 376. \$12.50. Originally published as *De Toekomst is Verleden Tijd*. Transl. from the Dutch by Elise Boulding.
- ROUCEK, J. S., ed. Contemporary political ideologies. New York: Philosophical Lib., 1961. Pp. x, 470. \$10.
- SCHWARTZ, H. The Red Phoenix—Russia since World War II. New York: Praeger, 1961. Pp. xii, 427. \$6.
- THEOBALD, R. The challenge of abundance. New York: C. N. Potter, 1961. Pp. xiii, 235. \$4.50.
- TUMIN, M. M. with FELDMAN, A. S. Social class and social change in Puerto Rico. Princeton: Princeton Univ. Press, 1961. Pp. xxvi, 549. \$10.
- Political and economic planning. Advisory committees in British government. London: Allen & Unwin, 1960. Pp. 228.
- Treaties in force—a list of treaties and other international agreements of the United States in force on January 1, 1961. Compiled by the Treaty Affairs Staff, Office of the Legal Adviser, Dept. of State. Washington: Supt. Docs., 1961. Pp. viii, 296. \$1.50.

PERIODICALS

General Economics; Methodology

- ARCELLI, M. Crisi dell'econometria o errata impostazione metodologica? *L'industria*, 1961, 1, pp. 33-44.
- AUSTRUY, J. Méthodes mathématiques et sciences de l'homme. *Rev. Econ.*, May 1961, pp. 414-39.
- CLEMENCE, R. V. The Wellesley undergraduate tutorial. *Am. Econ. Rev.*, June 1961, pp. 385-87.
- CLÉRIGA VERA, J. Principios fundamentales de la teoría de la ciencia. II. Investigación Econ., 1960, 20 (4), pp. 789-834.
- HENRION, R. Les abus de puissance économique. *Cahiers Econ. de Bruxelles*, Jan. 1961, no. 9, pp. 35-55.
- SCHNEIDER, E. I progressi della teoria economica nel nostro tempo. *Riv. di Pol. Econ.*, Apr. 1961, pp. 555-66.
- WEISSKOPF, W. A. The changing moral temper of economic thought. *Zeitschr. f. Nationalök.*, 1961, 21 (1), pp. 1-20.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- ADLER, J. H. Note on "spurt" inflation. *Soc. and Econ. Stud.*, March 1961, pp. 63-71.
- ALEXANDERSSON, G. Changes in the location pattern of the Anglo-American steel industry: 1948-1959. *Econ. Geog.*, Apr. 1961, pp. 95-114.
- ANDERSON, W. H. L. AND CORNWALL, J. Problems of growth policy. *Rev. Econ. Stat.*, May 1961, pp. 163-74.
- BACKER, M. Flexible costs for pricing decisions. *N.A.A. Bull.*, May 1961, sec. 1, pp. 55-66.
- BEAR, D. V. T. A multi-sector model of balanced growth. *Rev. Econ. Stat.*, May 1961, pp. 156-62.
- BERNHARD, R. C. English law and American law on monopolies and restraints of trade. *Jour. Law and Econ.*, Oct. 1960, pp. 136-45.
- BERTOLDI, F. Il comportamento turistico come consumo. *Riv. di Pol. Econ.*, Feb. 1961, pp. 194-212.
- Bishop, G. A. The tax burden by income class, 1958. *Nat. Tax Jour.*, Mar. 1961, pp. 41-58.
- Boo, I. Der Merkantilismus in Deutschland. *Jahrb. f. Nationalök. und Stat.*, May 1961, pp. 125-45.
- BRONFENBRENNER, M. Overproduction, underconsumption, et hoc genus omne. *Quart. Rev. Econ. Bus.*, Feb. 1961, pp. 46-53.
- BROWN, M. Profit, output, and liquidity in the theory of fixed investment. *Internat. Econ. Rev.*, Jan. 1961, pp. 110-21.
- BURCHARD, J. R. A critical look at the marginal graph technique. *N.A.A. Bull.*, May 1961, sec. 1, pp. 25-32.
- BUTLER, E. B. Auction prices: estimated and realised. *Econ. Jour.*, Mar. 1961, pp. 114-19.
- CAFF, J. T. A generalisation of the multiplier-accelerator model. *Econ. Jour.*, Mar. 1961, pp. 36-52.
- COASE, R. H. The problem of social cost. *Jour. Law and Econ.*, Oct. 1960, pp. 1-44.
- DEVLETIOGLU, E. A. Correct public prediction and the stability of equilibrium. *Jour. Pol. Econ.*, Apr. 1961, pp. 142-61.

- DIETRICH, J. Anpassungsvorgänge im Gedankenexperiment. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 45-55.
- DILLON, J. L. AND HEADY, E. O. A model for entrepreneurial decisions under free competition. *Metroeconomica*, Apr. 1961, pp. 20-28.
- DUMMETT, M. AND FARQUHARSON, R. Stability in voting. *Econometrica*, Jan. 1961, pp. 33-43.
- ELLIS, J. M. Cannan and Veblen as institutionalists. *Am. Jour. Econ. Soc.*, Apr. 1961, pp. 305-12.
- ESAWA, D. Mikro- und Makroanalyse in der Standortslehre. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 19-28.
- FELLNER, W. Two propositions in the theory of induced innovations. *Econ. Jour.*, June 1961, pp. 305-8.
- FERGUSON, C. E. AND MOORE, A. M. Measuring changes in community welfare. *Metroeconomica*, Apr. 1961, pp. 1-11.
- FERRALL, V. E., JR. Quality discounts and competition: economic rationality or Robinson-Patman. *Jour. Law and Econ.*, Oct. 1960, pp. 146-66.
- FISHER, F. M. The stability of the Cournot oligopoly solution: the effects of speeds of adjustment and increasing marginal costs. *Rev. Econ. Stud.*, Feb. 1961, pp. 125-35.
- FISHER, F. M. AND ROTHENBERG, J. How income ought to be distributed: paradox lost. *Jour. Pol. Econ.*, Apr. 1961, pp. 162-80.
- FORTE, F. AND BUCHANAN, J. M. The evaluation of public services. *Jour. Pol. Econ.*, Apr. 1961, pp. 107-21.
- FRANKEL, M. Producer goods, consumer goods and acceleration of growth. *Econ. Jour.*, Mar. 1961, pp. 1-19.
- FRIEDRICHS, G. Beeinflussung von Konjunkturverlauf und Beschäftigungshöhe durch den technischen Fortschritt. *Schmollers Jahrb.*, 1961, 81 (2), pp. 19-38.
- FRISCH, R. Numerical determination of a quadratic preference function for use in macroeconomic programming. *Giorn. d. Econ.*, Jan.-Feb. 1961, pp. 43-83.
- GÄRGEN, G. Zur Theorie kollektiver Entscheidungen in der Wirtschaft. *Jahrb. f. Nationalök. und Stat.*, Apr. 1961, pp. 1-49.
- GALLAWAY, L. E. AND SMITH, P. E. Real balances and the permanent income hypothesis. *Quart. Jour. Econ.*, May 1961, pp. 302-13.
- GAREGNANI, P. Sulla relazione tra saggio di progresso tecnico e vita economica dei capitali fissi. *Riv. di Pol. Econ.*, Mar. 1961, pp. 393-406.
- GIACALONE-MONACO, T. Le "Cronache" politiche ed economiche di Pareto. *Giorn. d. Econ.*, Nov.-Dec. 1960, pp. 788-815.
- GRUBER, U. Wachstumstheoretische Beziehungen in der Akkumulationstheorie von Karl Marx. *Jahrb. f. Nationalök. und Stat.*, Dec. 1960, pp. 392-99.
- HABERLER, G. Sulla sussistenza o meno del ciclo economico. *Riv. di Pol. Econ.*, Mar. 1961, pp. 379-92.
- HAMBERG, D. AND SCHULTZE, C. L. Autonomous versus induced investment: the interrelatedness of parameters in growth models. *Econ. Jour.*, Mar. 1961, pp. 53-65.
- HAMMING, G., MOL, J. AND SCHILDERINCK, J. H. F. Factoranalyse in theorie en praktijk. *De Economist*, Mar.-Apr. 1961, pp. 198-219.
- HARROD, R. The "neutrality" of improvements. *Econ. Jour.*, June 1961, pp. 300-4.
- HATEM, J. Structures de marché et formes de concurrence. *Rev. Econ.*, May 1961, pp. 500-13.
- HELELÄ, T. Hintojen muutoksista ja niiden ennakoimisesta. (An attempt to measure excess-demand and cost-push—with English summary.) *Kansantaloudellinen Aikakauskirja*, 1961, 1, pp. 32-43.
- HOLMANS, A. E. The quantity of money, gross national product and the price level. *Scot. Jour. Pol. Econ.*, Feb. 1961, pp. 28-44.

- HOLTE, F. C. Casual relationships and the assumptions about the latent variables of shock-models. *L'industria*, 1961, 1, pp. 3-17.
- HOWE, M. Competition and the multiplication of products. *Yorkshire Bull. Econ. Soc. Research*, Nov. 1960, pp. 57-72.
- JAKSCH, H. J. AND KÖNIG, H. Zur Ordnung der Produktionsstruktur von Vielsektorenmodellen. *Jahrb. f. Nationalök. und Stat.*, Dec. 1960, pp. 400-15.
- JOHN, A. H. Aspects of English economic growth in the first half of the eighteenth century. *Economica*, May 1961, pp. 176-90.
- KENNEDY, C. Technical progress and investment. *Econ. Jour.*, June 1961, pp. 292-99.
- KEYES, L. S. Price discrimination in law and economics. *So. Econ. Jour.*, Apr. 1961, pp. 320-28.
- KLAU, F.-W. Die Auswirkungen von Arbeitszeitverkürzungen auf den optimalen Produktionsplan einer Mehrproduktunternehmung. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 119-38.
- KLEIN, L. R. AND KOSOBUD, R. F. Some econometrics of growth: great ratios of economics. *Quart. Jour. Econ.*, May 1961, pp. 173-98.
- KNIGHT, F. H. Methodology in Economics, II. *So. Econ. Jour.*, Apr. 1961, pp. 273-82.
- KOTTKE, F. J. Simultaneous price fluctuations as a test of the significance of product substitution. *Antitrust Bull.*, Nov.-Dec. 1960, pp. 627-32.
- KREININ, M. E. Windfall income and consumption—additional evidence. *Am. Econ. Rev.*, June 1961, pp. 388-89.
- KRELLE, W. Die Investitionsfunktion. *Jahrb. Nationalök. und Stat.*, Dec. 1960, pp. 345-91.
- KUZNETS, S. Conceptos y supuestos en las proyecciones a largo plazo del producto nacional. *El Trimestre Econ.*, Apr.-June 1961, pp. 307-35.
- LABIA, N. Price velocity and dynamics. *Econ. Jour.*, Mar. 1961, pp. 66-78.
- LIEBHAFSKY, H. H. Marshall and Slutsky on the theory of demand. *Can. Jour. Econ. Pol. Sci.*, May 1961, pp. 176-91.
- LINDBECK, A. Den klassiska "dichotomien." (The classical "Dichotomy.") *Ekon. Tids.*, Apr. 1961, pp. 24-46.
- LIPSEY, R. G. AND STEUER, M. D. The relation between profits and wage rates. *Economica*, May 1961, pp. 137-55.
- LOTTE, J. L'épargne institutionnelle. *Rev. Econ.*, May 1961, pp. 468-99.
- LYTTON, H. D. Public sector productivity. *Rev. Econ. Stat.*, May 1961, pp. 182-84.
- MACFIE, A. L. Adam Smith's theory of moral sentiments. *Scot. Jour. Pol. Econ.*, Feb. 1961, pp. 12-27.
- MACHLUP, F. The supply of inventors and inventions. *Weltwirtschaft. Archiv*, 1960, 85 (2), pp. 210-50.
- MAFFEI, R. B. Advertising effectiveness, brand switching and market dynamics. *Jour. Indus. Econ.*, Apr. 1961, pp. 119-31.
- MERCILLON, H. Nouvelles orientations de la théorie de l'oligopole. *Rev. d'Econ. Pol.*, Jan.-Feb. 1961, pp. 47-81.
- MILLER, H. L., JR. On the theory of demand for consumer durables. *So. Econ. Jour.*, Apr. 1961, pp. 298-304.
- NEGISHI, T. On the formation of prices. *Internat. Econ. Rev.*, Jan. 1961, pp. 122-26.
- NEISSER, H. Equilibrium dynamics, behavior dynamics, stability of movement. *Metroeconomica*, Apr. 1961, pp. 12-19.
- NELSON, R. R. A note on stability and the behavior assumptions of Harrod-type models. *Econ. Jour.*, June 1961, pp. 335-49.
- NEWMAN, P. Viability and stability in linear models. *Metroeconomica*, Apr. 1961, pp. 29-31.

- NEWMAN, P. K. AND READ, R. C. Production functions with restricted input shares. *Internat. Econ. Rev.*, Jan. 1961, pp. 127-33.
- OI, W. Y. The desirability of price instability under perfect competition. *Econometrica*, Jan. 1961, pp. 58-64.
- OSHIMA, H. T. Consumer asset formation and the future of capitalism. *Econ. Jour.*, Mar. 1961, pp. 20-35.
- PALOMBA, G. Sulla generalizzazione d'un problema di sostituzionalità fra due fattori produttivi. *Riv. di Pol. Econ.*, Feb. 1961, pp. 183-93.
- PAPI, G. U. Di qualche origine delle previsioni inflazionistiche. *Giorn. d. Econ.*, Nov.-Dec. 1960, pp. 734-54.
- PLEASE, S. The counter-cyclical behaviour of public investment in the United Kingdom since the war. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 269-80.
- . The effect of public investment policy in some economically developed countries. *Internat. Lab. Rev.*, May 1961, pp. 436-58.
- POELMANS, J. AND GUYOT, J. L'évolution des dépenses de consommation en Belgique de 1948 à 1959. *Cahiers Econ. de Bruxelles*, Jan. 1961, no. 9, pp. 5-34.
- POPESCU, O. Tendencias actuales del pensamiento económico. (With English summary.) *Económica*, Jan.-June 1958, pp. 135-73.
- PUTHUCHEARY, J. Investment incentive and income tax. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 218-33.
- ROBINSON, J. Equilibrium growth models. (Review article.) *Am. Econ. Rev.*, June 1961, pp. 360-69.
- ROBINSON, R. The economics of disequilibrium price. *Quart. Jour. Econ.*, May 1961, pp. 199-233.
- SCHEELE, E. Mikroökonomie und Makroökonomie. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 601-25.
- SHACKLE, G. L. S. Recent theories concerning the nature and role of interest. *Econ. Jour.*, June 1961, pp. 209-54.
- SHEAHAN, J. Problems and possibilities of industrial price control: post-war French experience. *Am. Econ. Rev.*, June 1961, pp. 345-59.
- SHEN, T. Y. Innovation, diffusion, and productivity changes. *Rev. Econ. Stat.*, May 1961, pp. 175-81.
- SIDDALL, W. R. Wholesale-retail trade ratios as indices of urban centrality. *Econ. Geog.*, Apr. 1961, pp. 124-32.
- SMITH, L. W. Cash management for control of investment. *N.A.A. Bull.*, May 1961, sec. 1, pp. 5-12.
- SOBOTKA, S. P. AND SCHNABEL, C. Linear programming as a device for predicting market value: prices of used commercial aircraft, 1959-65. *Jour. Bus. Univ. Chicago*, Jan. 1961, pp. 10-30.
- TAVITIAN, R. Hausse des salaires et stabilité des prix. *Rev. Econ.*, May 1961, pp. 440-67.
- TELSER, L. G. Why should manufactures want fair trade? *Jour. Law and Econ.*, Oct. 1960, pp. 86-105.
- UZAWA, H. Neutral inventions and the stability of growth equilibrium. *Rev. Econ. Stud.*, Feb. 1961, pp. 117-24.
- VANDENBORRE, H. Verkenning in de macro-economie. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (1), pp. 42-60.
- VIBE-PEDERSEN, J. Multiplikatorvirkningen af indirekte skatter. *Nationaløk. Tids.*, 1960, 98 (5-6), pp. 214-50.
- VICKREY, W. Counterspeculation, auctions, and competitive sealed tenders. *Jour. Finance*, Mar. 1961, pp. 8-37.
- v. NATZMER, H. Traditionelle und moderne Kostenkurven. *Zeitschr. f. Nationalök.*, 1961, 21 (1), pp. 37-87.

- WAELEBROECK, J. L'analyse économétrique et sa place dans l'histoire des doctrines économiques. *Cahiers Econ. de Bruxelles*, Apr. 1961, no. 10, pp. 221-28.
- WEIPPERT, G. Produzieren, Konsumieren und die Rolle der Konsumgenossenschaften. *Zeitschr. f. Nationalök.*, 1961, 21 (1), pp. 21-36.
- WILLEMSSEN, M. A. The effect upon the rate of private savings of a change from a personal income tax to a personal expenditure tax. *Nat. Tax. Jour.*, Mar. 1961, pp. 98-103.
- WINICK, C. The relationship among personality needs, objective factors, and brand choice: a re-examination. *Jour. Bus. Univ. Chicago*, Jan. 1961, pp. 61-66.
- WITTEVEEN, H. J. Winsttaandeel en economische groei. *De Economist*, Mar.-Apr. 1961, pp. 145-85.
- WOLFE, J. N. Co-ordination assumptions and multiple equilibria. *Quart. Jour. Econ.*, May 1961, pp. 262-77.
- YORDON, W. J., JR. A model of price flexibility: Comment: Reply by J. V. Yance. *Am. Econ. Rev.*, June 1961, pp. 390-93.
- Prices and the turnpike. Three articles by J. R. Hicks, M. Morishima, and R. Radner. *Rev. Econ. Stud.*, Feb. 1961, pp. 77-104.

Economic History; Economic Development; National Economies

- AMES, E. Research, invention, development and innovation. *Am. Econ. Rev.*, June 1961, pp. 370-80.
- AUSTRUYS, J. Existe-t-il un mode obligé de croissance? *Rev. d'Econ. Pol.*, Jan.-Feb. 1961, pp. 82-104.
- BAECK, L. De onderontwikkelde landen in de economische literatuur. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (1), pp. 61-95.
- BALASSA, B. Patterns of industrial growth: Comment. *Am. Econ. Rev.*, June 1961, pp. 394-97.
- BHATIA, R. J. Inflation, deflation, and economic development. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 101-14.
- BIENAYME, A. La réorientation de la croissance planifiée française et les risques de freinage par le commerce extérieur. *Cahiers l'Inst. de Sci. Econ. Appliquée*, Aug. 1960, pp. 1-39.
- CORBON, J. Un développement accéléré mais fragile: le Koweït. *Dével. et Civil. (IRFED)*, Jan.-Mar. 1961, pp. 54-66.
- DELAHAUT, J. P. AND KIRSCHEN, E. S. Les revenus nationaux du monde non communiste. *Cahiers Econ. de Bruxelles*, Apr. 1961, no. 10, pp. 145-76.
- DELLA PORTA, G. Results of the policy for the development of Southern Italy in the "fifties." *Rev. Econ. Conditions in Italy*, Jan. 1961, pp. 44-54.
- DESAI, P. A short-term planning model for the Indian economy. *Rev. Econ. Stat.*, May 1961, pp. 193-200.
- DE WOLFF, P. De ontwikkeling der lange-termijnplannen in Nederland en hun betekenis voor de economische politiek. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (1), pp. 5-27.
- DOBB, M. Notes on recent economic discussion. *Soviet Stud.*, Apr. 1961, pp. 342-52.
- CANTARELLI, D. Parerga sulla politica economica dei paesi sottosviluppati. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Apr. 1961, pp. 313-33.
- DOMÍNGUEZ, L. M. Comercio internacional, industrialización y desarrollo económico. (With English summary.) *Económica*, Jan.-June 1953, pp. 3-102.
- DUCCROS, B. Insuffisance de l'épargne privée et inflation dans les pays sous-développés. *Rev. d'Econ. Pol.*, Jan.-Feb. 1961, pp. 5-46.
- DUPONT, C. AND KEESING, F. A. G. The Yugoslav economic system and instruments of Yugoslav economic policy: a note. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 77-84.

- DUVAUX, J. Critères d'investissement et développement économique. *Rev. Econ.*, May 1961, pp. 369-413.
- EK, S. B. Economic booms, innovations, and the popular culture. *Econ. and Hist.*, 1960, 3, pp. 3-37.
- ENKE, S. Food constraints on industrial development in poor countries. *So. Econ. Jour.*, Apr. 1961, pp. 293-97.
- ESTEVEZ, V. R. Desarrollo económico sin inflación: la experiencia de Puerto Rico. *El Trimestre Econ.*, Apr.-June 1961, pp. 229-46.
- FEINSTEIN, C. H. Income and investment in the United Kingdom, 1856-1914. *Econ. Jour.*, June 1961, pp. 367-85.
- FEUERWERKER, A. Materials for the study of the economic history of modern China. *Jour. Econ. Hist.*, Mar. 1961, pp. 41-60.
- GADOLIN, C. A. J. Synpunkter på grekisk och egyptisk ekonomi. *Ekon. Samfundets Tids.*, 1961, 14 (1), pp. 1-19.
- GALBRAITH, J. K. A positive approach to economic aid. *For. Affairs*, Apr. 1961, pp. 444-57.
- GÜLICHEN, H. Ein einfaches ökonomisches Dezisionsmodell zur Beurteilung der quantitativen Auswirkungen einiger wirtschaftspolitischer Massnahmen für die Wirtschaft der Bundesrepublik. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 56-85.
- HOLLISTER, C. W. The Norman conquest and the genesis of English feudalism. *Am. Hist. Rev.*, Apr. 1961, pp. 641-63.
- HUQ, A. M. Fiscal policy in an expanding economy: a case study of Pakistan. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 283-312.
- ISSAWI, C. Egypt since 1800: a study in lop-sided development. *Jour. Econ. Hist.*, Mar. 1961, pp. 1-26.
- JAHN, D. Was bedeutet Strukturpolitik für Konjunktur und Wachstum? *Schmollers Jahrb.*, 1961, 81 (2), pp. 39-48.
- JASNY, N. A note on rationality and efficiency in the Soviet economy: I. *Soviet Stud.*, Apr. 1961, pp. 353-75.
- JORGENSEN, D. W. The development of a dual economy. *Econ. Jour.*, June 1961, pp. 309-34.
- KAWANO, K. French Revolution and the progress of capitalism. *Kyoto Univ. Econ. Rev.*, Oct. 1960, pp. 30-44.
- KERSCHAGL, R. Östliche und westliche Finanzierungsmethoden für Investitionen in den unterentwickelten Gebieten. *Schmollers Jahrb.*, 1961, 81 (1), pp. 45-63.
- KHATKHATE, D. R. Investment pattern, techniques and growth. *Econ. Internaz.*, Feb. 1961, pp. 21-35.
- . Opportunity cost and its application to underemployment. *Soc. Research*, Spring 1961, pp. 60-70.
- KILBY, P. African labour productivity reconsidered. *Econ. Jour.*, June 1961, pp. 273-91.
- KLEIN, S. The land reform policies of the Chinese Communist Party, 1928-58: a brief economic analysis. *Agric. Hist.*, Apr. 1961, pp. 59-64.
- KNESCHAUREK, F. Wachstumsprobleme der schweizerischen Volkswirtschaft. *Wirtschaft und Recht*, 1961, 13 (1), pp. 33-49.
- KOKKALIS, A. Neue rationelle Wege zur Steigerung der ökonomischen und wissenschaftlichen Leistung des Westens. *Schmollers Jahrb.*, 1961, 81 (2), pp. 1-18.
- KOSIACHENKO, G. Greater material incentives and technological progress. *Prob. Econ.*, Feb. 1960, pp. 23-33.
- KUBINSKI, Z. M. Indirect and direct taxation in an export economy: a case study of the Republic of the Sudan. (With French summary.) *Pub. Fin./Fin. Publique*, 1959, 15 (2), pp. 316-43.
- LAZZARINI, B. Il primo biennio di attuazione del piano settennale sovietico. (With English summary.) *Pol. d. Scambi*, Jan.-Feb. 1961, pp. 29-42.

- LENORT, N. J. "Richtzahlen" oder "Kompositionsregeln" für die kommunale Entwicklungsplanung. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 723-41.
- LERDAU, E. Estabilización de los productos básicos. *El Trimestre Econ.*, Apr.-June 1961, pp. 264-79.
- LINDHOLM, R. W. The farm: the misused income expansion base of emerging nations. *Jour. Farm Econ.*, May 1961, pp. 236-46.
- MASERA, F. Lo sviluppo economico dell'Italia e la bilancia dei pagamenti. *Studi Econ.*, Nov.-Dec. 1960, pp. 479-91.
- MILONE, F. Regional structure of Italian economy, V. *Rev. Econ. Conditions in Italy*, Mar. 1961, pp. 124-57.
- NUTTER, G. W. Employment in the Soviet economy: an interim solution to a puzzle. *Soviet Stud.*, Apr. 1961, pp. 376-93.
- PREBISCH, R. Joint responsibilities for Latin American progress. *For. Affairs*, July 1961, pp. 622-33.
- RABINOVICH, I. Soviet-American trade relations from 1923 to 1933. *Prob. Econ.*, Feb. 1961, pp. 52-61.
- RESTA, M. Sull'inflazione strutturale da sviluppo concentrato. *L'industria*, 1961, 1, pp. 18-32.
- ROSENBERG, W. Capital imports and growth—the case of New Zealand—foreign investment in New Zealand, 1840-1958. *Econ. Jour.*, Mar. 1961, pp. 93-113.
- ROSENSTEIN-RODAN, P. N. International aid for underdeveloped countries. *Rev. Econ. Stat.*, May 1961, pp. 107-38.
- ROSTOW, W. W. Stadien wirtschaftlichen Wachstums und Probleme einer friedlichen Koexistenz. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 1-18.
- SANTORELLI, P. La politique industrielle du gouvernement italien. *Vie Econ. et Soc.*, Mar. 1961, pp. 89-104.
- SETON, F. The Soviet economy in the fifties. *Westminster Bank Rev.*, May 1961, pp. 17-30.
- SMITHIES, A. Rising expectations and economic development. *Econ. Jour.*, June 1961, pp. 255-72.
- STALEY, C. E. Export taxes in Ceylon, 1948-52. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 249-65.
- SVENSSON, J. A case study in economic retardation. *Econ. and Hist.*, 1960, 3, pp. 38-55.
- VINER, J. The intellectual history of laissez faire. *Jour. Law and Econ.*, Oct. 1960, pp. 45-69.
- VITO, F. Lo sviluppo economico delle zone arretrate e sottosviluppate con particolare riguardo alla industrializzazione e al miglioramento dell'agricoltura. *Rassegna Econ.*, Jan.-Apr. 1961, pp. 5-23.
- VON BISSING, W. M. FRHR. Wirtschaft und Gesellschaft in Japan. I, II. *Schmollers Jahrb.*, 1961, 81 (1), (2), pp. 1-29, 49-84.
- VON LAUE, T. H. Russian peasants in the factory 1892-1904. *Jour. Econ. Hist.*, Mar. 1961, pp. 61-80.
- WALD, H. P. El sistema impositivo en la agricultura de las economías en proceso de desarrollo. *El Trimestre Econ.*, Apr.-June 1961, pp. 247-63.
- WEILLER, J. Fluctuations économiques et niveau d'ajustement de la balance des paiements: L'expérience française au cours des années de grande dépression. *Cahiers l'Inst. de Sci. Écon. Appliquée*, Aug. 1960, pp. 1-28.
- Accumulation et développement économique de la Chine. A symposium by Ch. Bettelheim and others. *Econ. Appliquée*, 1960, 13 (3), pp. 347-483.
- Programmation régionale et théorie économique. I. (With English summaries.) A symposium by U. Papi and others. *Écon. Appliqué*, 1960, 13 (4), pp. 491-649.

Sector of economic competition, Economic Research Institute of the USSR State Economic Council: different systems—different results. *Prob. Econ.*, Feb. 1961, pp. 12-16.
 Use of models in programming. *Indus. and Prod.*, Apr. 1961, pp. 7-17.

Statistical Methods; Econometrics; Social Accounting

- COHEN, K. J. Two approaches to computer simulation. *Jour. Acad. Manag.*, Apr. 1961, pp. 43-49.
 GRILICHES, Z. A note on serial correlation bias in estimates of distributed lags. *Econometrica*, Jan. 1961, pp. 65-73.
 HOLESOVSKY, V. Karl Marx and Soviet national income theory. *Am. Econ. Rev.*, June 1961, pp. 325-44.
 HORNER, F. B. The meaning of production indexes. *Econ. Record*, Mar. 1961, pp. 82-97.
 JIMÉNEZ GIL, J. Las tablas "Input-Output" y la tipología estructural. *De Economía*, Jan.-Mar. 1961, pp. 123-236.
 JORGENSON, D. W. Stability of a dynamic input-output system. *Rev. Econ. Stud.*, Feb. 1961, pp. 105-116.
 MAXWELL, A. E. Recent trends in factor analysis. *Jour. Royal Stat. Soc.*, 1961, 124 (1), pp. 49-59.
 RICOSSA, S. Sui requisiti di una buona contabilità economica nazionale. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, May 1961, pp. 418-31.
 ROSTRO, F. Un camino directo para la obtención de fórmulas de números índices. *El Trimestre Econ.*, Apr.-June 1961, pp. 217-28.
 SWAN, A. W. Operational research in industry. *Prod. Meas. Rev.*, Aug.-Nov. 1960, pp. 13-104.
 THEIL, H. AND GOLDBERGER, A. S. On pure and mixed statistical estimation in economics. *Internat. Econ. Rev.*, Jan. 1961, pp. 65-78.
 Size distribution of personal income, 1957-60: role of capital gains, earnings, and supplementary incomes. *Surv. Curr. Bus.*, May 1961, pp. 11-21.

Economic Systems; Planning and Reform; Cooperation

- BEERMANN, R. Gosbank procedures in the case of economic difficulties of enterprises. *Soviet Stud.*, Jan. 1961, pp. 273-87.
 CHURCHWARD, L. G. Contemporary Soviet theory of the Soviet state. *Soviet Stud.*, Apr. 1961, pp. 404-19.
 COSTELLO, D. P. Voluntarism and determinism in Bolshevik doctrine. *Soviet Stud.*, Apr. 1961, pp. 394-403.
 HEFFER, E. S. British socialism and its problems. *The Review*, 1961, 3 (1), pp. 23-33.
 HULICKA, K. Political and economic aspects of planning of the national economy in the U.S.S.R. and the Soviet bloc. *So. Afr. Jour. Econ.*, Mar. 1961, pp. 3-34.
 NANTWADA, H. Die Grundlagen der sozialen Marktwirtschaft in der Sicht eines Japaners. *Schmollers Jahrb.* 1961, 87 (1), pp. 31-44.
 PARRILLO, F. Teoria della politica economica e pianificazione. *Riv. di Pol. Econ.*, Apr. 1961, pp. 567-92.
 RIMLINGER, G. V. The trade union in Soviet social insurance: historical development and present functions. *Indus. Lab. Rel. Rev.*, Apr. 1961, pp. 397-418.
 SKOVORODA, K. Supply and demand for goods in a socialist society. *Prob. Econ.*, Apr. 1961, pp. 16-23.
 STURMTHAL, A. The workers councils in Poland. *Indus. Lab. Rel. Rev.*, Apr. 1961, pp. 379-96.
 SWEARER, H. R. Administration of local industry after the 1957 industrial reorganization. *Soviet Stud.*, Jan. 1961, pp. 217-30.

- TINBERGEN, J. Do communist and free economies show a converging pattern? *Soviet Stud.*, Apr. 1961, pp. 333-41.
- TRIFON, R. The economics of cooperative ventures—further comments. *Jour. Farm Econ.*, May 1961, pp. 215-35.
- WERNER, J. Probleme einer gemischten Wirtschaftsordnung. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 29-44.

Business Fluctuations

- GERFIN, H. Einige Probleme mittel- und langfristiger Marktprognosen. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Mar. 1961, pp. 45-63.
- GUTTENTAG, J. M. The short cycle in residential construction, 1946-59. *Am. Econ. Rev.*, June 1961, pp. 275-98.
- STEKLER, H. O. Diffusion index and first difference forecasting. *Rev. Econ. Stat.*, May 1961, pp. 201-9.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- AHRENSDORF, J. AND KANESATHASAN, S. Variations in the money multiplier and their implications for central banking. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 126-49.
- ALBERS, W. Staatsverschuldung und Geld- und Kreditpolitik. *Finanzarchiv*, Apr. 1961, pp. 25-46.
- ARIENTI, A. Il sistema dei saggi attivi nell'accordo interbancario vigente in Italia. (With English summary.) *Risparmio*, Mar. 1961, pp. 447-86.
- BAFFI, P. AND OCCHUTO, A. La componente esterna della liquidità e le regole della condotta monetaria. *Giorn. d. Econ.*, Nov.-Dec. 1960, pp. 715-33.
- BLANK, S. Small business and tight money. *Jour. Finance*, Mar. 1961, pp. 73-79.
- BLESSING, K. The situation as regards monetary policy in the German Federal Republic. *Riv. Internaz. di Sci. Econ. e Com.*, Feb. 1961, pp. 155-64.
- BRUNNER, K. A schema for the supply theory of money. *Internat. Econ. Rev.*, Jan. 1961, pp. 79-109.
- CAPRARA, U. La moneta bancaria nei regolamenti internazionali. *Risparmio*, Jan. 1961, pp. 1-25.
- JUCKER-FLEETWOOD, E. E. Monetary and financial problems of certain new countries in Africa. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Mar. 1961, pp. 1-22.
- KAREKEN, J. H. On the relative merits of reserve-ratio changes and open-market operations. *Jour. Finance*, Mar. 1961, pp. 65-72.
- MILLER, E. Monetary policies in the United States since 1950: some implications of the retreat to orthodoxy. *Can. Jour. Econ. Pol. Sci.*, May 1961, pp. 205-22.
- NATER, J. E. Enige opmerkingen over het begrip omloopsnelheid. *De Economist*, Mar.-Apr. 1961, pp. 186-97.
- NIRHANS, J. Das schweizerische Geldsystem und die Zinstheorie. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 577-600.
- OTT, D. J. The financial development of Japan, 1878-1958. *Jour. Pol. Econ.*, Apr. 1961, pp. 122-41.
- RODDEWIG, C. M. Diversification: key to transportation progress. *Financial Analysts Jour.*, Mar.-Apr. 1961, pp. 53-56.
- ROWAN, D. C. The Radcliffe Report: a distant view. *Econ. Record*, Mar. 1961, pp. 53-72.
- SAYERS, R. S. Alternative views of central banking. *Economica*, May 1961, pp. 111-24.
- WHITE, W. H. The flexibility of anticyclical monetary policy. *Rev. Econ. Stat.*, May 1961, pp. 142-47.
- Federal Reserve operations in perspective. *Fed. Res. Bull.*, Mar. 1961, pp. 272-81.

Public Finance; Fiscal Policy

- ARENA, C. I principi economici della finanza pubblica. *Giorn. d. Econ.*, Jan.-Feb. 1961, pp. 1-42.
- ARNDT, H. Zur mikroökonomischen Analyse der Überwälzbarkeit der Einkommensteuer und zur Frage der Übertragung von Modellergebnissen auf historische Tatbestände. *Finanzarchiv*, Apr. 1961, pp. 47-59.
- DEMARCO, D. Per la storia della finanza pubblica napoletana nel secolo XVIII: il costo della epidemia di peste di Reggio Calabria del 1743. *Giorn. d. Econ.*, Jan.-Feb. 1961, pp. 84-100.
- DUE, J. F. Studies of state-local tax influences on location of industry. *Nat. Tax Jour.*, June 1961, pp. 163-73.
- GALLAWAY, L. E. Proposals for federal aid to depressed industrial areas: a critique. *Indus-Lab. Rel. Rev.*, Apr. 1961, pp. 363-78.
- GARRIGOU-LAGRANGE, A. Évolution du système fiscal français au vingtième siècle. *Rev. Sci. Fin.*, Apr. 1961, pp. 199-210.
- GERELLI, E. Politiche fiscali e commercio estero dei paesi sottosviluppati. III. *Giorn. d. Econ.*, Nov.-Dec. 1960, pp. 762-87.
- JACOBY, N. H. Taxation in Laos: policies for a new country with an undeveloped economy. *Nat. Tax Jour.*, June 1961, pp. 145-62.
- KIRSCHEN, E. S. AND MORISSENS, L. Les finances publiques dans la politique économique. *Cahiers Econ. de Bruxelles*, Jan. 1961, no. 9, pp. 57-97.
- LAMPFMAN, R. J. How much government spending in the 1960's? *Quart. Rev. Econ. Bus.*, Feb. 1961, pp. 7-17.
- LAUFENBURGER, H. Réflexions sur l'imposition des sociétés anonymes. Etude comparée. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, May 1961, pp. 401-13.
- LEARNER, A. P. The burden of debt. *Rev. Econ. Stat.*, May 1961, pp. 139-41.
- LINDHOLM, R. W. Taxation in South Viet-Nam. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 236-47.
- MANN, F. K. Ideologie und Theorie des Haushaltsgleichgewichts. *Finanzarchiv*, Apr. 1961, pp. 1-24.
- MARAS, G. Some basic remarks on the relationship between economic development and the balance of payments. *Fin. and Trade Rev.*, Dec. 1960, pp. 205-16.
- NELSON, F. "Taxes are devilish things." *Am. Jour. Econ. Soc.*, Apr. 1961, pp. 225-38.
- PARKS, R. H. Theory of tax incidence. *Nat. Tax Jour.*, June 1961, pp. 190-97.
- ROSSI, L. Per un sistema razionale delle imposte indirette. *Giorn. D. Econ.*, Nov.-Dec. 1960, pp. 755-61.
- SCOTT, M. FG. A tax on price increases? *Econ. Jour.*, June 1961, pp. 350-66.
- SHOUP, C. S. Tax tension and the British fiscal system. *Nat. Tax Jour.*, Mar. 1961, pp. 1-40.
- WELLS, P. Excise tax incidence in an imperfectly competitive economy. (With French summary.) *Pub. Fin./Fin. Publiques*, 1959, 14 (3-4), pp. 203-16.
- WILLIAMS, E. T. Trends in forest taxation. *Nat. Tax Jour.*, June 1961, pp. 113-44.
- Impôts sur la fortune. (A collection of national reports.) Eight articles by B. Hansen, W. Albers and others. *Pub. Fin./Fin. Publiques*, 1960, 15 (3-4), pp. 199-365.

International Economics

- ABS, H. J. Questioni d'attualità nell'integrazione economica europea. (With Eng. summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Feb. 1961, pp. 165-73.
- AUBREY, H. G. Financial policy and American purpose. *For. Affairs*, Apr. 1961, pp. 471-80.
- BACHMANN, H. Zwischen Zollautonomie und Zollunion. *Aussenwirtschaft*, Mar. 1961, pp. 23-39.

- BERTOLDI, F. La teoria comportamentale del turismo. (With English summary.) *Mondo Aperto*, Feb.-Apr. 1961, pp. 1-48.
- BEZA, S. T. AND PATTERSON, G. Foreign exchange guarantees and the dollar. *Am. Econ. Rev.*, June 1961, pp. 381-84.
- BIRNBAUM, E. A. AND QURESHI, M. A. Advance deposit requirements for imports. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 115-25.
- BRESCIANI TURRONI, C. Laborious progress on the road to international monetary balance. *Rev. Econ. Conditions in Italy*, Jan. 1961, pp. 5-18.
- COPPE, A. Mededinging in de Gemeenschappelijke Markt. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (1), pp. 28-41.
- GASPARINI, I. Tendenze del commercio mondiale ed equilibrio nei rapporti economici internazionali. (With English summary.) *Risparmio*, Jan. 1961, pp. 26-41.
- GINSBURGS, G. Soviet atomic energy agreements. *Internat. Organ.*, Winter 1961, pp. 49-65.
- GRUBEL, H. G. Ricardo and Thornton on the transfer mechanism. *Quart. Jour. Econ.*, May 1961, pp. 292-301.
- HACKETT, J. W. Tasa de desarrollo, mercado común y balanza de pagos. *El Trimestre Econ.*, Apr.-June 1961, pp. 280-306.
- HUMPHREY, D. D. The effects of a customs union in Western Europe. *So. Econ. Jour.*, Apr. 1961, pp. 283-92.
- KEVORK, C. The elimination of tariffs in a wide free trade area in Europe: an analysis for selected commodities. *Jour. Royal Stat. Soc.*, 1961, 124 (1), pp. 81-92.
- KRAGH, B. Orsakssammanhang mellan terms of trade och inflation. *Ekon. Tids.*, Apr. 1961, pp. 47-59.
- KREININ, M. E. Effect of tariff changes on the prices and volume of imports. *Am. Econ. Rev.*, June 1961, pp. 310-24.
- LALOUX, D. Du Benelux au Marché Commun. *Cahiers Econ. de Bruxelles*, Apr. 1961, no. 10, pp. 209-20.
- LEARY, T. J. Exchange devaluation and interpenetration within the European Coal and Steel Community. *Quart. Rev. Econ. Bus.*, Feb. 1961, pp. 64-73.
- MARCHAL, A. Integration nationale et integration européenne. *Giorn. d. Econ.*, Nov.-Dec. 1960, pp. 693-714.
- MARCUS, E. Labor resources as a factor in international competition. *Soc. Research*, Spring 1961, pp. 15-22.
- MATSUI, K. On Japan's liberalization of trade and exchange. *Kyoto Univ. Econ. Rev.*, Oct. 1960, pp. 16-29.
- MCDUGALL, I. A. Tariffs, protection and the terms of trade. *Econ. Record*, Mar. 1961, pp. 73-81.
- MEIER, G. M. Export stimulation, import substitution and Latin-American development. *Soc. and Econ. Stud.*, Mar. 1961, pp. 42-62.
- MEYER-MARSILIUS, H. J. Diskriminierungseffekte im zukünftigen schweizerisch-deutschen Handel. *Aussenwirtschaft*, Mar. 1961, pp. 40-51.
- MILLER, N. C. Concentration in institutional common-stock portfolios. *Jour. Finance*, Mar. 1961, pp. 38-51.
- NARVEKAR, P. R. The role of competitiveness in Japan's export performance, 1954-58. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 85-100.
- PEARCE, I. F. The problem of the balance of payments. *Internat. Econ. Rev.*, Jan. 1961, pp. 1-28.
- PERLO, V. The persistence of the dollar crisis. *Sci. and Soc.*, Spring 1961, pp. 107-28.
- REITER, S. Efficient international trade and equalization of factor prices. *Internat. Econ. Rev.*, Jan. 1961, pp. 29-64.
- ROSSELLE, E. AND WAELBROECK, J. La position de la Belgique vis-à-vis de ses concurrents du Marché Commun, essai de diagnostic économétrique. *Cahiers Econ. de Bruxelles*, Jan. 1960, no. 9, pp. 115-42.

- RUDLOFF, M. Effets d'accélération et théorie du commerce international. *Cahiers l'Inst. de Sci. Econ. Appliquée*, Aug. 1960, pp. 1-22.
- SDRALEVICH, A. Aumenti di produttività e ragioni di scambio: recenti contributi al perfezionamento di un modello classico. *L'industria*, 1961, 1, pp. 45-70.
- THOMÉ, B. The World Bank and private enterprise. *Skandinav. Bank. Quart. Rev.*, Apr. 1961, pp. 33-38.
- VERNON, R. A trade policy for the 1960s. *For. Affairs*, Apr. 1961, pp. 458-70.
- VINER, J. Economic foreign policy on the New Frontier. *For. Affairs*, July 1961, pp. 560-77.
- YNTEMA, T. O. Economic adjustments among nations. *Jour. Finance*, Mar. 1961, pp. 1-7.
- Fund policies and procedures in relation to the compensatory financing of commodity fluctuations. *Internat. Mon. Fund Staff Papers*, Nov. 1960, pp. 1-76.
- Una moneta internazionale per gli scambi dell'Occidente? Maggiori investimenti manterranno l'alta congiuntura? Il preventivo dello Stato per l'esercizio 1961-62. Gli insegnamenti dello sviluppo meridionale. *L'industria*, 1961, 1, pp. 92-101.

Business Finance; Investment and Security Markets; Insurance

- BELSHAW, M. Aspects of the theory of discounting. *Engineering Economist*, Spring 1961, pp. 1-19.
- DIRCKX, A. Le financement des petites et moyennes entreprises. *Annales de Sci. Econ. Appliquées*, Mar. 1961, pp. 11-34.
- ELSOM, H. B. Common stocks and the short-term interest rate. *Financial Analysts Jour.*, Mar.-Apr. 1961, pp. 21-26.
- FISHER, G. R. Some factors influencing share prices. *Econ. Jour.*, Mar. 1961, pp. 120-41.
- HERWITZ, D. R. Stock redemptions and the accumulated earnings tax. *Harvard Law Rev.*, Mar. 1961, pp. 866-938.
- KATZ, W. G. Responsibility and the modern corporation. *Jour. Law and Econ.*, Oct. 1960, pp. 75-85.
- SERRANO SANCHEZ, J. M. I. El análisis de actividades en el campo financiero. *Rev. de Econ. Pol.*, Sept.-Dec. 1960, pp. 901-68.
- SERRA RAMONEDA, A. Consideraciones sobre la definición y los efectos de la autofinanciación. *De Economía*, Jan.-Mar. 1961, pp. 43-60.

Business Organization; Managerial Economics; Marketing; Accounting

- ISTVAN, D. F. The economic evaluation of capital expenditures. *Jour. Bus. Univ. Chicago*, Jan. 1960, pp. 45-51.
- JOHNSTON, J. An econometric study of the production decision. *Quart. Jour. Econ.*, May 1961, pp. 234-61.
- REYNOLDS, I. N. Selecting the proper depreciation method. *Accounting Rev.*, Apr. 1961, pp. 239-48.
- SHUBIK, M. Approaches to the study of decision-making relevant to the firm. *Jour. Bus. Univ. Chicago*, Apr. 1961, pp. 101-18.
- SMITH, C. A. The effects of combinations of "fast" and "slow" depreciation on reported net income. *N.A.A. Bull.*, Apr. 1961, Sec. 1, pp. 31-42.
- SOLO, R. A. Intra-enterprise conspiracy and the theory of the firm. *Jour. Bus. Univ. Chicago*, Apr. 1961, pp. 153-66.

Industrial Organization; Government and Business; Industry Studies

- BICKS, R. A. The federal government's program on identical bids. *Antitrust Bull.*, Nov.-Dec. 1960, pp. 617-26.
- BOSLAND, C. C. The valuation of public utility enterprises by the Securities and Exchange Commission. *Jour. Finance*, Mar. 1961, pp. 52-64.

- BOYLE, S. E. Government promotion of monopoly power: an examination of the sale of the synthetic rubber industry. *Jour. Indus. Econ.*, Apr. 1961, pp. 151-69.
- CIRIACY-WANTRUP, S. V. Projections of water requirements in the economics of water policy. *Jour. Farm Econ.*, May 1961, pp. 197-214.
- CONANT, M. British antitrust in action. *Mich. Law Rev.*, Apr. 1961, pp. 855-902.
- DEAN, J. Competitive pricing in railroad freight rates. *Jour. Marketing*, Apr. 1961, pp. 22-27.
- DIENST, P. Contrôle de gestion dans une entreprise de transport aérien. *Annales de Sci. Econ. Appliquées*, Dec. 1960, pp. 587-660.
- FEROLDI, F. Un aspetto particolare del problema della nazionalizzazione delle imprese. (With English summary.) *Risparmio*, Mar. 1961, pp. 433-46.
- FOLDES, L. Domestic air transport policy. *I. Economica*, May 1961, pp. 156-75.
- FUCHS, V. R. Integration, concentration, and profits in manufacturing industries. *Quart. Jour. Econ.*, May 1961, pp. 278-91.
- HOLMBERG, A. Restrictive practices and commercial policy in the Common Market. *Skandinav. Bank. Quart. Rev.*, Apr. 1961, pp. 39-45.
- HUNTER, A. Restrictive practices and monopolies in Australia. *Econ. Record*, Mar. 1961, pp. 25-52.
- JOSKOW, J. Structural indicia: rank-shift analysis as a supplement to concentration ratios. *Antitrust Bull.*, Jan.-Feb. 1961, pp. 9-18.
- LAMBIN, J.-J. Réflexions sur la nature et le rôle de la fonction commerciale dans une entreprise de services. *Annales de Sci. Econ. Appliquées*, Dec. 1960, pp. 665-706.
- MARS, P. A. An economic comparison of the textile industries in the U.S.A. and the U.K. *Jour. Indus. Econ.*, Apr. 1961, pp. 181-94.
- MAXWELL, W. D. Product rate discrimination in motor trucking. *So. Econ. Jour.*, Apr. 1961, pp. 305-19.
- PAAKKANEN, J. Kilpailutalouden yleiset tavoitteet ja keinot. (The objectives and means of the restrictive practices legislation—with English summary.) *Kansantaloudellinen Aikakauskirja*, 1961, 1, pp. 20-31.
- PHILLIPS, C. F., JR. Market performance in the synthetic rubber industry. *Jour. Indus. Econ.*, Apr. 1961, pp. 132-50.
- PHILLIPS, C. F., JR. AND HALL, G. R. Merger litigation, 1951-1960. *Antitrust Bull.*, Jan.-Feb. 1961, pp. 19-42.
- PRESTON, L. E. Concentration and rigidity in industry structure. *Antitrust Bull.*, Nov.-Dec. 1960, pp. 645-52.
- RAHL, J. A. Does Section 5 of the Federal Trade Commission Act extend the Clayton Act? *Antitrust Bull.*, Sept.-Oct. 1960, pp. 533-50.
- ROEPKE, H. G. The impact of the St. Lawrence Seaway on marketing patterns. *Jour. Marketing*, Apr. 1961, pp. 5-11.
- SPIER, L. The German cartel law: an attempt to eliminate the restraint of competition. *Bus. Rev. (Univ. Wash.)*, Apr. 1961, pp. 19-28.
- STELZER, I. M. Administered prices vs. price wars: co-existence in business. *Antitrust Bull.*, Nov.-Dec. 1960, pp. 609-16.
- STROUT, A. M. Weather and the demand for space heat. *Rev. Econ. Stat.*, May 1961, pp. 185-92.
- TURVEY, R. Some economic features of the London cab trade. *Econ. Jour.*, Mar. 1961, pp. 79-92.
- UENO, H. Investment behavior in the Japanese cotton spinning industry, 1916-1934. *Econometrica*, Jan. 1961, pp. 44-57.
- VON BÖVENTER, E. Eine ökonomische Untersuchung über die langfristige Entwicklung der Düngemittelnachfrage in Deutschland. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 626-71.

- . Untersuchungen über die langfristige Entwicklung der Nachfrage nach Pharmazeutika. *Zeitschr. f. die ges. Staatswiss.*, May 1961, pp. 86-118.
- WERNER, W. Wissenschaftliche Begriffsbildung in Bereich des Dezentralen Gewerbes. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 688-722.
- WHITE, J. M. The economic analysis of military equipment replacement. *Engineering Economist*, Spring 1961, pp. 20-27.
- Symposium on government contract patent policy. *Fed. Bar Jour.*, Winter 1961, pp. 3-163.
- Land Economics; Agricultural Economics; Economic Geography; Housing**
- BOMMEL, R. Interventionen der öffentlichen Hand, vorab des Bundes, im Wohnungsbau seit 1942. *Wirtschaft und Recht*, 1931, 13 (1), pp. 50-63.
- CARTER, H. O. AND DEAN, G. W. Cost-size relationships for cash crop farms in a highly commercialized agriculture. *Jour. Farm Econ.*, May 1961, pp. 264-77.
- DELGADO NAVARRO, J. Una política minera Mexicana. *Investigacion Econ.*, 1960, 20 (4), pp. 835-54.
- GREENWALD, W. I. Supply shifts and iron ore pricing. *Jour. Indus. Econ.*, Apr. 1961, pp. 170-80.
- JUNG, A. F. Price variations among home-remodeling contractors. *Jour. Bus. Univ. Chicago*, Jan. 1961, pp. 52-56.
- KANEL, D. Age components of decrease in number of farmers, North Central States, 1890-1954. *Jour. Farm Econ.*, May 1961, pp. 247-63.
- MUTH, R. F. Economic change and rural-urban land conversions. *Econometrica*, Jan. 1961, pp. 1-23.
- PHILLIPS, R. W. AND KUO, L. T. C. Agricultural development in Communist China. *Internat. Develop. Rev.*, Feb. 1961, pp. 19-23.
- RHODES, V. J. Acceptance and yield of choice and good beef: research results and implications. *Jour. Farm Econ.*, May 1961, pp. 181-96.

Labor Economics

- BARRY, C. White-collar employment: II—characteristics. *Mo. Lab. Rev.*, Feb. 1961, pp. 139-47.
- BROWN, E. C. A note on employment and unemployment in the Soviet Union in the light of technical progress. *Soviet Stud.*, Jan. 1961, pp. 231-40.
- BUNTING, R. L., ASHBY, L. D. AND PROSPER, P. A., JR. Labor mobility in three Southern states. *Indus. Lab. Rel. Rev.*, Apr. 1961, pp. 432-45.
- COLBERG, M. R. Minimum wage effects on Florida's economic development. *Jour. Law and Econ.*, Oct. 1960, pp. 106-17.
- DEFAY, J. La productivité du travail de 1948 à 1958—étude de l'effet des glissements intervenus dans la structure de l'emploi. *Cahiers Econ. de Bruxelles*, Jan. 1961, no. 9, pp. 99-114.
- DUNLOP, J. Consensus and national labor policy. *Mo. Lab. Rev.*, Mar. 1961, pp. 229-33.
- EVANS, R., JR. Some economic aspects of the domestic slave trade, 1830-1860. *So. Econ. Jour.*, Apr. 1961, pp. 329-37.
- HANSEN, W. L. The cyclical sensitivity of the labor supply. *Am. Econ. Rev.*, June 1961, pp. 299-309.
- KASSALOW, E. M. Organization of white-collar workers. *Mo. Lab. Rev.*, Mar. 1961, pp. 234-38.
- KNESCHAUREK, F. Entwicklungstendenzen auf dem europäischen Arbeitsmarkt. *Aussenwirtschaft*, Mar. 1961, pp. 63-81.
- LANDSBERGER, H. A. AND HULIN, C. L. A problem for union democracy: officers' attitudes toward union members. *Indus. Lab. Rel. Rev.*, Apr. 1961, pp. 419-31.
- LURIE, M. Government regulation and union power: a case study of the Boston transit industry. *Jour. Law and Econ.*, Oct. 1960, pp. 118-35.

- MEERZON, D. Work quotas and wages under conditions of modern technology. *Prob. Econ.*, Feb. 1961, pp. 40-46.
- PROKSCH, A. The Austrian Joint Wage and Price Council. *Internat. Lab. Rev.*, Mar. 1961, pp. 229-47.
- REZLER, J. Current issues of labour economics in the United States of America. *Internat. Soc. Sci. Jour.*, 1961, 13 (1), pp. 95-114.
- SEGAL, M. Regional wage differences in manufacturing in the postwar period. *Rev. Econ. Stat.*, May 1961, pp. 148-55.
- SELTZER, G. The United Steelworkers and unionwide bargaining. *Mo. Lab. Rev.*, Feb. 1961, pp. 129-36.
- SIEGEL, A. J. Steel strikes and bargaining abroad. *Mo. Lab. Rev.*, Feb. 1961, pp. 122-28.
- STEWART, F. H. No-strike clauses in the federal courts. *Mich. Law Rev.*, Mar. 1961, pp. 673-710.
- TROY, L. Local independent unions and the American labor movement. *Indus. Lab. Rel. Rev.*, Apr. 1961, pp. 331-49.
- VANNUTELLI, C. Labour in Italy in the "sixties." *Rev. Econ. Conditions in Italy*, Jan. 1961, pp. 26-43.
- VOLKOV, A. Reduction of the working day and adjustment of wages. *Prob. Econ.*, Feb. 1961, pp. 34-39.
- The steel study: summary and conclusions. *Mo. Lab. Rev.*, Feb. 1961, pp. 113-21.

Population; Welfare Programs; Consumer Economics

- DONNISON, D. V. The movement of households in England. *Jour. Royal Stat. Soc.*, 1961, 124 (1), pp. 60-80.
- GALÁN PÉREZ, J. M. El nivel del consumo de alimentos en la Europa Occidental. *De Economía*, Jan.-Mar. 1961, pp. 61-84.
- LESER, C. E. V. Commodity group expenditure functions for the United Kingdom, 1948-1957. *Econometrica*, Jan. 1961, pp. 24-32.
- MARZANO, A. Analisi dell'istruzione come capitale. *Riv. di Pol. Econ.*, Mar. 1961, pp. 407-34.
- MCDUGALL, D. M. Immigration into Canada, 1851-1920. *Can. Jour. Econ. Pol. Sci.*, May 1961, pp. 162-75.
- MORELLO, G. Beni di consumo e beni strumentali nello studio della distribuzione e del comportamento del consumatore. *Annali Fac. di Econ. e Com.*, 1960, 14 (2), pp. 81-100.
- RAYACK, E. Discrimination and the occupational progress of Negroes. *Rev. Econ. Stat.*, May 1961, pp. 209-14.
- SCOTT, F. D. The study of the effects of emigration. *Scan. Econ. Hist. Rev.*, 1960, 8 (2), pp. 161-74.
- SVENNILSON, I. Samhällsekonomska synpunkter på utbildning. *Ekon Tids.*, Apr. 1961, pp. 1-23.
- SZTARAY, Z. Birth control in Hungary since 1956. *The Review*, 1961, 3 (1), pp. 1-22.
- UNGERN-STERNBERG, R. Zur demographischen Lage in der Welt, mit besonderer Berücksichtigung Japans, Schwedens und Italiens. *Jahrb. f. Nationalök. und Stat.*, Apr. 1961, pp. 50-64.
- VÖCHTING, F. Die heutige italienische Ausund Binnenwanderung. *Zeitschr. f. die ges. Staatswiss.*, Feb. 1961, pp. 672-87.
- WILSON, L. Analyzing and evaluating costs in higher education. *Educational Rec.*, Apr. 1961, pp. 99-105.
- La consommation: a symposium by J. Meynaud, G. Rottier and others. *Rev. Econ.*, Mar. 1961, pp. 161-358.

Related Disciplines

- HEIM, P. The academic status of the economic scholar in the South. *So. Econ. Jour.*, Apr. 1961, pp. 338-45.
- KING, R. W. Technology and social progress. *Pol. Sci. Quart.*, Mar. 1961, pp. 3-10.

NOTES

SEVENTY-FOURTH ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOCIATION

Commodore Hotel, New York, N.Y.—December 27-29, 1961

Preliminary Announcement of the Program

Tuesday, December 26, 1961

6:00. P.M. EXECUTIVE COMMITTEE DINNER MEETING

Wednesday, December 27, 1961

9:30 A.M. SYSTEMS OF ECONOMIC ACCOUNTS AND ANALYSIS FOR URBAN REGIONS

Chairman: EDGAR M. HOOVER, Pittsburgh Regional Planning Association

Papers: A National System of Regional Accounts and Analysis

HARVEY S. PERLOFF, Resources for the Future

Design and Use of Accounts

WERNER Z. HIRSCH, Washington University, St. Louis

Organization for Data Collection, Analysis and Reporting

HENRY COHEN, Deputy City Administrator, New York City

Discussants: MEREDITH B. GIVENS, Institute of Public Administration,
New York

FREDERICK T. MOORE, The RAND Corporation

TAX PROBLEMS

Chairman: RICHARD A. MUSGRAVE, Princeton University

Papers: Income, Consumption, and Property as Alternative Bases of Taxation

RICHARD B. GOODE, Brookings Institution

Tax Incentives to Investment

E. CARY BROWN, Massachusetts Institute of Technology

Some Aspects of British Income Taxation

A. R. PREST, Cambridge University

Discussant: GEORGE F. BREAK, University of California, Berkeley

PROBLEMS OF ECONOMIC DEVELOPMENT

Chairman: THEODORE W. SCHULTZ, University of Chicago

Papers: Price Policy for Economic Development

KENNETH E. BOULDING AND PRITAM SINGH, University of
Michigan

The Use and Abuse of Growth Models

JOHN H. POWER, Williams College

The Development of Entrepreneurship

GUSTAV F. PAPANEK, Harvard University

Discussants: EVERETT E. HAGEN, Massachusetts Institute of Technology

ANDREW M. KAMARCK, International Bank for Reconstruction
and Development

2:30 P.M. RURAL POVERTY AND NATIONAL POLICY (Joint Session with the American Farm
Economic Association)

Chairman: WILLIAM H. NICHOLS, Vanderbilt University

THE AMERICAN ECONOMIC REVIEW

- Papers:* Economic Security for Agricultural Labor
 LOUIS LEVINE, U.S. Department of Labor
 Relation of the Low Income Farm Problem to Major National
 Economic Problems
 WILLIAM E. HENDRIX, U.S. Department of Agriculture
Discussants: LEONARD P. ADAMS, Cornell University
 JOHN G. MCNEELY, Agricultural and Mechanical College of
 Texas

INTERNATIONAL TRANSMISSION OF BUSINESS CYCLES, PROBLEMS, AND POLICIES

- Chairman:* HAL B. LARY, National Bureau of Economic Research
Papers: The Postwar Business Cycle in Western Europe
 MILTON GILBERT, Bank for International Settlements
 Economic Instability in an International Setting
 JACQUES J. POLAK, International Monetary Fund
Discussants: WALTER S. SALANT, Brookings Institution
 EMILE DESPRES, Stanford University
 RICHARD E. CAVES, University of California

THE NEW ENCYCLOPEDIA OF SOCIAL SCIENCES (Jointly sponsored by the American Economic Association and the American Statistical Association)

- Chairman:* ALVIN S. JOHNSON, The New School for Social Research
Papers: Developing the Idea of a New Encyclopedia
 FRANCIS X. SUTTON, The Ford Foundation
 Publishing the New Encyclopedia
 JEREMIAH KAPLAN, The Free Press of Glencoe
 Progress and Plans for the New Encyclopedia
 BERT F. HOSELITZ, University of Chicago

SOVIET ECONOMIC PLANNING

- Chairman:* EVSEY D. DOMAR, Massachusetts Institute of Technology
Papers: Input-Output Analysis and Soviet Planning
 HERBERT S. LEVINE, University of Pennsylvania
 The Scale of Soviet Industrial Establishments
 LEON SMOLINSKI, Boston College
 On Patterns of Technological Choice in Soviet Industry
 DAVID GRANICK, University of Wisconsin
Discussants: LLOYD G. REYNOLDS, Yale University
 JAMES H. BLACKMAN, University of North Carolina
 ALEXANDER ERLICH, Columbia University

8:00 P.M. PRESIDENTIAL ADDRESS

- Chairman:* ALVIN H. HANSEN, Harvard University
 Presentation of John Bates Clark Award
Presidential Address: PAUL A. SAMUELSON, Massachusetts Institute of
 Technology

Thursday, December 28, 1961

9:30 A.M. PROBLEMS OF PERSISTENT UNEMPLOYMENT (Joint Session with Industrial Relations Research Association)

- Chairman:* PHILIP TAFT, Brown University
Papers: Unemployment Statistics for Fiscal and Monetary Policy
 STANLEY LEBERGOTT, Stanford University
 Problems and Remedies for Depressed Area Unemployment
 WILLIAM H. MIERNYK, Northeastern University

Will Economic Growth Solve the Problem of Long-Term Unemployment?

RICHARD C. WILCOCK AND WALTER H. FRANKE, University of Illinois

Discussants: GEORGE H. BORTS, Brown University
JOHN G. TURNBULL, University of Minnesota
ROBERT J. LAMPMAN, University of Wisconsin

STUDIES IN BUSINESS BEHAVIOR

Chairman: ARTHUR F. BURNS, Columbia University

Papers: Investment Plans and Realizations

ROBERT EISNER, Northwestern University

Locational Aspects of Business Expansion Decisions

JAMES N. MORGAN AND EVA MUELLER, University of Michigan

The Predictive Value of Surveys of Business Intentions

ARTHUR M. OKUN, Yale University

Discussants: LAWRENCE KLEIN, University of Pennsylvania
DANIEL H. BRILL, Federal Reserve Board

THE ROLE OF TRANSPORTATION IN ECONOMIC DEVELOPMENT

Chairman: RALPH J. WATKINS, Brookings Institution

Papers: Air Transport and Economic Development: Some Comments on Foreign Aid Programs

HANS HEYMANN, JR., The RAND Corporation

The Role of Transport Investment in the Development of Iran

JOHN H. KAUFMANN, Washington, D.C.

Transportation and Economic Development

WILFRED OWEN, Brookings Institution

Discussants: HOLLAND HUNTER, Haverford College
JAMES R. NELSON, Amherst College

12:30 P.M. JOINT LUNCHEON WITH AMERICAN FINANCE ASSOCIATION

Chairman: ARTHUR M. WEIMER, President, American Finance Association

Speaker: ROBERT V. ROOSA, U.S. Treasury

2:30 P.M. REAPPRAISAL OF THE DOCTRINE OF CONSUMER SOVEREIGNTY

Chairman: WILLIAM J. FELLNER, Yale University

Papers: Automobile Model Changes and Social Costs

FRANKLIN M. FISHER, Massachusetts Institute of Technology,

H. ZVI GRILICHES, University of Chicago, and CARL KAYSEN, Harvard University

On the Principle of Consumers' Sovereignty

TIBOR SCITOVSKY, University of California

Consumers' Sovereignty Revisited

JEROME ROTHENBERG, Northwestern University

Discussants: ABRAM BERGSON, Harvard University
STANISLAW H. WELLISZ, University of Chicago
WILLIAM J. BAUMOL, Princeton University

ECONOMIC BEHAVIOR OF FAMILIES

Chairman: RUTH P. MACK, National Bureau of Economic Research

Papers: Toward a Microanalytic Model of the Household Sector

ARTHUR S. GOLDBERGER, University of Wisconsin

Toward a Microanalytic Model of the Economy

GUY H. ORCUTT, University of Wisconsin

THE AMERICAN ECONOMIC REVIEW

Discussants: ROBERT SUMMERS, University of Pennsylvania
 DANIEL B. SUITS, University of Michigan
 MONA E. DINGLE, Federal Reserve Board

TRANSPORTATION PROBLEMS IN THE AMERICAN ECONOMY

Chairman: ERNEST W. WILLIAMS, JR., Columbia University

Papers: Federal Transport Regulatory Policy

MAURICE P. ARTH, Booz, Allen & Hamilton, Chicago

The Pricing of Highway, Waterway and Airway Facilities

JAMES C. NELSON, Washington State University

The Merger Movement

KENT T. HEALY, Yale University

Discussants: MERRILL J. ROBERTS, University of Pittsburgh

DUDLEY F. PEGRUM, University of California, Los Angeles

THE MARKET FOR ECONOMISTS

Chairman: JAMES W. BELL, Northwestern University

Papers: The Supply of Economists

EWAN CLAGUE, U.S. Department of Labor

The Demand for Economists

FRANCIS M. BODDY, University of Minnesota

The Functioning of the Market for Economists

GERALD G. SOMERS, University of Wisconsin

Discussants: SEYMOUR E. HARRIS, Harvard University

GEORGE CLINE SMITH, F-W-Dodge Corporation

HOWARD D. MARSHALL, Vassar College

8:00 P.M. INVITED LECTURE

Chairman: R. A. GORDON, University of California

Paper: Recent Development in the Theory of the Firm

HERBERT SIMON, Carnegie Institute of Technology

Discussants: ALLEN WALLIS, University of Chicago

PAUL LAZERSFELD, Columbia University

JOHN LINTNER, Harvard University

Friday, December 29, 1961

9:30 A.M. THE LAGGING U.S. GROWTH RATE

Chairman: SIMON KUZNETS, Harvard University

Papers: What Would it Take to Increase the U.S. Full Employment Growth Rate?

EDWARD F. DENISON, Committee for Economic Development

ROBERT SOLOW, Massachusetts Institute of Technology

Discussants: FRANCO MODIGLIANI, Northwestern University

GERHARD COLM, National Planning Association

JOHN CORNWALL, Tufts University

ARTHUR SMITHIES, Harvard University

ECONOMICS OF WATER RESOURCE USE

Chairman: ROBERT DORFMAN, Harvard University

Papers: The Economic Structure of the Water Industry in California

JOE S. BAIN, University of California, Berkeley

The Political Economy of Water Development

VINCENT OSTROM, University of California, Los Angeles

Extensions of Cost-Benefit Analysis

GEORGE S. TOLLEY, North Carolina State College

Discussants: STEPHEN MAROLIN, Harvard University

JEROME W. MILLIMAN, Indiana University

THE TEACHING OF ECONOMICS

Chairman: BEN W. LEWIS, Oberlin College*Papers:* The Content of the Introductory Course

BERNARD F. HALFY, Stanford University

The Relation of the Undergraduate Major to Graduate Economics

RICHARD RUGGLES, Yale University

Discussants: ROYALL BRANDIS, University of Illinois

KENNETH D. ROOSE, Michigan State University, Oakland

CARL STEVENS, Reed College

2:30 P.M. REPORT OF THE COMMISSION ON MONEY AND CREDIT, COMMITTEE FOR ECONOMIC DEVELOPMENT

Chairman: G. L. BACH, Carnegie Institute of Technology*Papers:* Comments: MILTON FREIDMAN, University of Chicago

Comments: WARREN L. SMITH, University of Michigan

Comments: RALPH A. YOUNG, Federal Reserve Board

Discussants: ROMNEY ROBINSON, Brandeis University

ROBERT LINDSAY, New York Federal Reserve Bank

THE ECONOMICS OF RESEARCH AND DEVELOPMENT

Chairman: CARL KAYSER, Harvard University*Papers:* Efficiency versus Progress

BURTON H. KLEIN, The RAND Corporation

Determinants of Inventive Activity

JACOB SCHMOOKLER AND OSWALD H. BROWNLEE, University of Minnesota

Technological Change in American Industries

W. ERIC GUSTAFSON, Harvard University

Discussants: H. ZVI GRILICHES, University of Chicago

JAMES W. MCKIE, Vanderbilt University

ACCOUNTANTS AND ECONOMISTS LOOK AT DEPRECIATION (Panel Discussion with American Institute of Certified Public Accountants)

Chairman: MAURICE MOONITZ, University of California and American Institute of Certified Public Accountants*Panelists:* GEORGE W. TERBORGH, Washington, D.C.

VERNON L. SMITH, Purdue University

WALTER R. STAUB, New York

WILLIAM W. WERNITZ, New York

5:00 P.M. BUSINESS MEETING

6:00 P.M. EXECUTIVE COMMITTEE DINNER MEETING

INTERNATIONAL ECONOMIC ASSOCIATION CONGRESS

The Second Congress of the International Economic Association will be held in Vienna from August 30 to September 6, 1962. The program under the general heading of Economic Development will be divided into the following sections: (1) The Determinants of Economic Development, Chairman, Austin Robinson; (2) Industrialization and Methods of Increasing Labor Productivity, Chairman, Clark Kerr; (3) Techniques and Problems of Development Planning, Chairman, J. Tinbergen; (4) The Stabilization of Primary Producing Economies, Chairman, A. Lewis. All meetings will take place in the University of Vienna. Each session will be devoted to the discussion of a paper by one or more speakers chosen in advance, after which it will be open to all participants. Participants will be asked to inform the Secretariat in advance as to which section they wish to join.

All members of the American Economic Association are invited to take part in the Congress. The Österreichisches Verkehrsbüro is responsible for the registration of participants and for the collection of a registration fee of \$10.00 as well as for travel arrangements and hotel reservations. Since accommodation in Vienna may be difficult to secure

at the last moment, those intending to participate should write as soon as possible to the Österreichisches Verkehrsbüro, Vienna 1, Friedrichstrasse 7, Austria. They will receive an application form, together with details of hotel accommodation available.

CONFERENCE OF LATIN AMERICAN FACULTIES OF ECONOMICS

The second Conference of Latin American Faculties of Economics was held from October 10 to 15, 1960 at Rosario, Argentina, with delegates from 27 universities in 14 nations. Whereas the previous conference, held in Santiago, Chile, in 1953, concerned principally the teaching of economics, delegates to the Second Conference addressed themselves both to the training of economists and to the economic integration of Latin America.

Papers and discussion on the "Latin American Common Market as a Factor in Economic Development" centered largely upon the Latin American Free Trade Association (LAFTA). Other topics studied included the possible incidence of European economic integration on Latin America, transport problems, payments and credit arrangements, and the coordination of national economic planning to ensure complementarity of regional industrial development.

To carry out resolutions adopted, and to provide continuity of relationship between the faculties during the three or four years that will probably elapse before the next conference, a Department of Coordination was established at the host faculty of the Second Conference. One of the first activities of this office will be the publication of papers presented to the Second Conference (in Spanish); requests may be directed to Dr. Samuel Gorban, Dean, Facultad de Ciencias Económicas, Comerciales y Políticas, Universidad Nacional del Litoral, Boulevard Oroño 1261, Rosario, Argentina.

THE NEW ENCYCLOPEDIA OF THE SOCIAL SCIENCES

Work on a new Encyclopedia of the Social Sciences has started at the University of Chicago under the direction of Bert F. Hoselitz. Plans are for a completely new Encyclopedia of 12 to 15 volumes rather than a supplement to or revision of the old Encyclopedia. Simultaneous publication of all volumes has been tentatively scheduled for 1965.

Like the original, the new Encyclopedia will encompass the five social sciences: anthropology, economics, political science, psychology and sociology. In addition it will include material from the applied fields of business, education, medicine, law and psychiatry as well as from related fields in human geography, the humanities, linguistics, philosophy, social and economic history and statistics. It will also bring together authoritative and succinct accounts of the main theoretical and empirical findings of the various social sciences. Special care will be given to problems of scientific method in the social sciences, including those of observation and measurement, of formulation of theories, and of the verification of hypotheses.

Guidance for the work of the Encyclopedia is provided by an Editorial Advisory Board with W. Allen Wallis, Dean, Graduate School of Business, University of Chicago, as chairman. The membership of the Board, drawn from the various social sciences and related fields, numbers more than 100, though it is not yet completely constituted. It includes Paul A. Samuelson, incumbent president of the American Economic Association, and four past presidents, Arthur F. Burns, Alvin S. Johnson (associate editor of the original Encyclopedia), Simon Kuznets and Jacob Viner. Offices are at 5836 Greenwood Ave., Chicago 37, Illinois. As announced last December, the publishers of the new Encyclopedia will be the Crowell-Collier Publishing Co., the Macmillan Co. and the Free Press.

FELLOWSHIPS AND GRANTS

The Social Science Research Council's annual announcement describing fellowships and grants to be awarded in 1961-62 is now ready for distribution. It lists research training fellowships, faculty research fellowships, grants-in-aid of research, without major change, and states that international conference travel grants will again be offered. Applications for some categories of awards are due not later than November 1, 1961. Inquiries should be addressed to the Social Science Research Council, Fellowships and Grants, 230 Park Ave., New York 17, N. Y.

The American Council of Learned Societies announces the continuation of aid to scholars in the form of fellowships, grants-in-aid and travel grants to international conferences. For information about this aid and deadlines for applications address inquiries to Miss Marie J. Medina, American Council of Learned Societies, 345 East 46th Street, New York 17, N. Y.

Grants for area programs under joint ACLS-SSRC sponsorship will be offered to mature scholars for research in the social sciences and humanities on certain foreign areas. Grants for research on Africa South of the Sahara, on Contemporary China, on Latin America, and on the Near and Middle East (including North Africa) will be administered by the Social Science Research Council. Those for Asian studies and for Slavic and East European studies will be administered by the American Council of Learned Societies. Communications should be sent to the administering Councils at the addresses given in the two paragraphs above.

The Inter-University Committee on Travel Grants is accepting applications from graduate students and scholars who wish to spend all or part of the academic year 1962-63 in study and research in the Soviet Union as participants in the academic exchange between the United States and the U.S.S.R. American citizens under 40 years of age are eligible if they are graduate students, post-doctoral researchers or faculty members at the time of application. Teachers of the Russian language in secondary schools are also eligible. Persons from all fields of study are encouraged to apply, provided they can show professional and scholarly benefit to be derived from study in the Soviet Union. A knowledge of Russian adequate to the needs of study and research is required.

Funds are available to cover all or part of the exchange participant's expenses, depending on the participant's own financial needs and resources. For further information and applications write to Stephen Viederman, Deputy-Chairman, Inter-University Committee on Travel Grants, 719 Ballantine Hall, Indiana University, Bloomington, Indiana.

The Population Council, Inc. will establish a center for African demographic studies at Princeton University for research and the training of specialists in African population studies. It will be supported by a Carnegie Corporation grant of \$120,000 to the Council.

Aid programs, as well as the governments of the new states in Africa, urgently need the sociological and economic data obtained from basic inventories of human resources, such as censuses. The Center will recruit and train African and American economists, other social scientists and statisticians to gather data in Africa, to analyze and evaluate it, and to apply it to development programs. Dr. Ansley J. Coale, director of the Office of Population Research at Princeton, will devote much time to the project. Frank Lorimer, an expert on African demography, William Brass, visiting professor of statistics from Aberdeen University, Scotland and D. F. Heisel, a demographer-sociologist, will give full time to the work of the center. In addition, several visiting fellows and graduate students will participate in the research.

The Mississippi Valley Historical Association has received a grant from the Ford Motor Company Fund to encourage research on the history of American transportation. Fletcher M. Green, of the University of North Carolina, president of the Mississippi Valley Association, has announced that \$2,000 of the grant will be given as a prize to the author of the best publishable book-length manuscript on the history of transportation in America. Further information may be obtained from W. D. Aeschbacher, Secretary of the Mississippi Valley Historical Association, 1500 R Street, Lincoln 8, Nebraska.

Announcements

Since May 1960 the Banco Central de Venezuela, Caracas, Venezuela, has published a quarterly journal entitled *Revista de Economía Latinoamericana*. Articles in the journal will be on a high technical level, dealing particularly with problems of Latin American development. For subscriptions write the Library, Banco Central de Venezuela, Caracas. The subscription price is \$5.00 a year; single numbers, \$1.50.

Individual Relations Counselors, Inc. are now making available many of their publications to institutions and scholars. A list of such publications, some dating back to the early 1930's, may be obtained from Mr. Richard A. Beaumont, Associate Director of Research, Industrial Relations Counselors, Inc., 1270 Avenue of the Americas, New York 20, N. Y.

The University of Nebraska, with the assistance of several other organizations, is planning a Homestead Centennial Symposium for June 10-14, 1962. This symposium will commemorate the passage of the Homestead Act in 1862 by reviewing present land problems and considering future land policies of the United States. For further information write Howard W. Ottoson, chairman, Department of Agricultural Economics, University of Nebraska, Lincoln, Nebraska.

Deaths

- Vanderveer Custis, emeritus professor, Northwestern University, June 17, 1961.
David P. Delorme, Oklahoma City University, April 1961.
Rudolph F. C. Hernried, University of San Francisco, February 27, 1960.
Alexander H. Lavery, December 12, 1960.
Albert W. Paddock, Cincinnati, Ohio, June 22, 1960.
Francis D. Tyson, professor emeritus, University of Pittsburgh, April 5, 1961.
Harold C. Yeager, November 1960.
Erich W. Zimmerman, University of Texas, February 16, 1961.

Retirements

- Jacob J. Blair, University of Pittsburgh, September 1961.
Clara Eliot, Barnard College, June 1961.
W. Carlton Harris, Wharton School, University of Pennsylvania, July 1961.
J. Freeman Pyle, University of Maryland.
Harold B. Rowe, Brookings Institution, June 1961.
Tipton R. Snively, professor emeritus, University of Virginia.

Visiting Foreign Scholars

- Roy A. Church, University of Nottingham: visiting assistant professor, University of Washington, 1961-62.
Jacques Dreze, University of Louvain: visiting associate professor, Northwestern University, winter and spring quarters, 1961-62.
R. C. O. Matthews, Cambridge University, England: visiting professor, University of California, Berkeley, 1961-62.
A. L. Nagar, Econometric Institute, Netherland School of Economics, Rotterdam: visiting professor, Purdue University, 1961-62.
Michael Polanyi, Merton College, Oxford University: visiting scholar, Thomas Jefferson Center for Studies in Political Economy, University of Virginia, first semester, 1961-62.
Ian G. Stewart, University of Edinburgh: visiting associate professor of economics, University of Michigan, second semester, 1961-62.
Tore Thonstad, University of Oslo: visiting professor of economics, University of Minnesota, 1961-62.
C. von der Panne, University of Rotterdam: visiting Ford research fellow, Carnegie Institute of Technology, 1961-62.

Promotions

- Robert J. Alexander: professor of economics, Rutgers—The State University.
Martin J. Beckmann: professor of economics, Brown University.
R. Glen Berryman: associate professor of accounting, University of Minnesota.

- Heinz Biesdorf: assistant professor of economics, University of Pittsburgh.
- Vincent F. Boland: associate professor of economics, University of Arizona.
- Royall Brandis: professor, department of economics, University of Illinois.
- William H. Brown, Jr.: associate professor of economics, Swarthmore College.
- Karl Brunner: professor of economics, University of California, Los Angeles.
- Meyer L. Burstein: associate professor of economics, Northwestern University.
- Rondo E. Cameron: professor of economics and history, University of Wisconsin.
- Richard C. Clelland: associate professor of statistics, Wharton School, University of Pennsylvania.
- Kalman J. Cohen: associate professor of economics and industrial administration, Carnegie Institute of Technology.
- Lorne B. Cook: professor of economics, Pomona College.
- Robert G. Cox: professor of accounting, Wharton School, University of Pennsylvania.
- J. Kenneth Davies: associate professor of economics, Brigham Young University.
- Lubomir A. D. Dellin: associate professor, University of Vermont.
- Donald E. Farrar: assistant professor of economics, University of Wisconsin.
- Edward C. Fei: professor of economics, University of Wisconsin.
- Thomas W. Gavett: associate professor of economics, College of Commerce, West Virginia University.
- J. B. Gillingham: associate professor of economics, University of Washington.
- Nicholas A. Glaskowsky, Jr.: associate professor of business administration, University of Minnesota.
- Robert S. Hancock: professor of marketing, University of Minnesota.
- Delbert C. Hastings: professor of statistics, University of Minnesota.
- Edward S. Herman: associate professor of finance, Wharton School, University of Pennsylvania.
- Donald R. Hodgman: professor of economics, University of Illinois.
- Bob Holdren: associate professor, department of economics, Iowa State University.
- Jonathan R. T. Hughes: professor of economics, Purdue University.
- Charles P. Issawi: professor of Near and Middle East economics, Columbia University.
- Jay E. Johnson, Jr.: assistant professor of accounting, West Virginia University.
- Paul V. Johnson: associate professor of economics, Purdue University.
- Dale W. Jorgenson: associate professor of economics, University of California, Berkeley.
- Patrick S. Kemp: associate professor of business administration, Emory University.
- Paul B. Kohberger: professor of business administration, Graduate School of Business, University of Pittsburgh.
- William Lazer: professor, Graduate School of Business Administration, Michigan State University.
- David A. LeSourd: associate professor, University of Vermont.
- Thomas A. Mahoney: professor of economics and industrial relations, University of Minnesota.
- Robert H. Marshall: associate professor of economics, University of Arizona.
- Duncan M. McDougall: associate professor of economics, Purdue University.
- Walter W. McMahon: associate professor of economics, University of Illinois.
- Allan H. Meltzer: associate professor of economics and industrial administration, Carnegie Institute of Technology.
- Albert Montgomery: assistant economist, Bureau of Economic and Business Research, Washington State University.
- Morris D. Morris: professor of economics, University of Washington.

Milton J. Nadworny: professor, department of commerce and economics, University of Vermont.

Kenji Okuda: associate professor of economics, Washington State University—on leave current academic year, at Institute of Business Administration, Karachi, Pakistan.

Roy Radner: professor of economics, University of California, Berkeley.

Julius Rezler: professor of industrial relations, Loyola University, Chicago; on leave 1961-62, Fulbright lecturer, Xavier Labour Relations Institute, Jamshedpur, India.

G. N. Rostvold: professor of economics, Pomona College.

Samuel R. Sapienza: associate professor of accounting, Wharton School, University of Pennsylvania.

Martin Segal: associate professor of economics, Dartmouth College.

Malcolm F. Severance: associate professor, department of economics, University of Vermont.

John B. Sheahan: associate professor of economics, Williams College.

Paul F. Smith: professor, Graduate School of Business Administration, Michigan State University.

Vernon L. Smith: professor of economics, Purdue University; on leave as professor of economics, Stanford University, spring term of 1961-62.

Nicolas Spulber: professor of economics, Indiana University.

W. J. Stankiewicz: associate professor, University of British Columbia.

Everett G. Stoneberg: associate professor, department of economics, Iowa State University.

Donald A. Taylor: professor, Graduate School of Business Administration, Michigan State University.

Douglas Vickers: associate professor of finance, Wharton School, University of Pennsylvania.

William D. Wagoner: assistant professor of economics, University of Wyoming.

James M. Waller: associate professor, College of Business Administration, University of Georgia.

Aaron W. Warner: professor of economics, Columbia University.

C. Edward Weber: associate professor of business administration, Graduate School of Business, University of Pittsburgh.

Paul J. Wells: associate professor, department of economics, University of Illinois.

Administrative Appointments

Harold Barger: chairman, department of economics, Columbia University.

Richard E. Caves: vice chairman, department of economics, University of California, Berkeley.

W. T. Easterbrook: chairman, department of political economy, University of Toronto.

Lloyd F. Hayn, Keene Teachers College: dean of Olivet College.

Jules Joskow, City College of New York: vice-president, National Economic Research Associates.

Robert J. Lampman: chairman, department of economics, University of Wisconsin.

Leland H. Langbein: head, department of economics, Muskingum College.

Richard A. Lester: chairman, department of economics, Princeton University.

Harold M. Levinson: acting chairman, department of economics, University of Michigan.

John A. Nordin, Iowa State University: head, department of economics and sociology, Kansas State University.

Douglas C. North: director, Institute for Economic Research, University of Washington.

Russell O. Olson, Ohio State University: chief, Land Use and Farm Management Branch,

Land and Water Development Division, Food and Agriculture Organization, Rome, Italy.

Marshall A. Robinson: dean, Graduate School of Business, University of Pittsburgh.

Harry F. Stark: executive director, Bureau of Economic Research, Rutgers—The State University.

George W. Stocking: chairman, department of economics and business administration, Vanderbilt University.

James C. Vadakin: chairman, department of economics, School of Business Administration, University of Miami.

R. C. Vreeland: chairman, department of economics, Mississippi Southern University.

John L. Wortham: chairman, department of economics, Texas Christian University.

Kenneth Zimmer: director, School of Business, Richmond Professional Institute, Richmond, Virginia.

Appointments

Gordon A. Antelman: instructor in statistics, Graduate School of Business, University of Chicago.

Lester L. Arnold, Ohio State University: agricultural economist, Research and Information Service, Farm Credit Administration, Washington, D.C.

Robert T. Averitt: assistant professor of economics, Smith College.

Marto A. Ballesteros, University of Chicago: assistant professor of economics, University of Washington.

Ralph E. Balyeat, University of Wichita: associate professor of management, College of Business Administration, University of Georgia.

Robin Barlow: assistant professor of economics, University of Michigan.

Stephen J. Barres: associate professor of management and economics, Orange County State College, Fullerton, California.

Antonin Basch, International Bank for Reconstruction and Development: visiting professor of economics and research associate, Center for Southern Asia Studies and Center for Research on Economic Development, University of Michigan.

Arthur Benavie: lecturer in economics, University of Michigan.

Irwin Bernhardt, University of California: assistant professor of economics, Carnegie Institute of Technology.

Howard R. Bloch: instructor in economics, Dartmouth College.

Joseph C. Blumel, Portland State College: lecturer in economics, University of Oregon.

W. Michael Blumenthal, Crown Cork International Corporation: Deputy Assistant Secretary for Economic Affairs, Department of State.

John D. Bowman: instructor in economics, department of economics, University of Illinois.

Stanley E. Boyle: associate professor of economics, School of Commerce and Finance, Saint Louis University.

Andrew F. Brimmer: assistant professor of finance, Wharton School, University of Pennsylvania: joint appointment with South Asia Regional Studies department.

James E. Brown, University of Washington: assistant professor of business administration, Emory University.

Edmund Brunner: economics department, The RAND Corporation, Santa Monica, California.

Edward C. Budd, Yale University: professor of economics, Pennsylvania State University.

Burnham O. Campbell, University of Illinois: assistant professor of economics, University of California, Los Angeles.

Donald M. Chang: assistant professor of industrial relations, School of Business Administration, American University.

Sidney J. Claunch: associate professor of management, University of Massachusetts.

Robert L. Comeau, The University of New Brunswick: instructor in economics, Boston College.

Frank Coolson: professor of marketing, School of Business Administration, American University.

Paul Cootner: visiting professor of economic theory, Graduate School of Arts and Sciences, Boston College.

M. Gordon Daniels, Texas A. and M. College: economic officer, U.S. Department of State, Bogota, Columbia.

Robert L. Darcy, Kansas State University: executive director, Ohio Council on Economic Education and associate professor of economics, Ohio University, Athens.

Paul A. David, Harvard University: assistant professor of economics, Stanford University.

Martin David, University of Michigan: assistant professor of economics, University of Wisconsin.

C. Howard Davis, Vanderbilt University: assistant professor of economics, Mercer University.

Gordon B. Davis: assistant professor of accounting, University of Minnesota.

Gerard Debreu: professor, department of economics, University of California, Berkeley.

Thomas F. Dernburg, Purdue University: associate professor of economics, Oberlin College.

Donald Dewey: associate professor of economics, Columbia University.

Paul D. Doak: research associate, department of economics, Iowa State University.

Edward N. Dubois: associate professor of economics, School of Commerce and Finance, Saint Louis University.

Robert V. Eagly: instructor, department of economics, Rutgers—The State University.

Robert Eilers: assistant professor of insurance, Wharton School, University of Pennsylvania.

G. A. Feltham, R. L. Bamford & Co.: assistant professor of accounting, Faculty of Commerce, University of Alberta.

James Ferguson: assistant professor of economics, University of Virginia.

Albert Fishlow: assistant professor, department of economics, University of California, Berkeley, 1961-62.

Curtis F. Forner: instructor, department of economics, Rutgers—The State University.

Edward M. Foster, Massachusetts Institute of Technology: assistant professor of economics, University of Minnesota.

Lawrence E. Fouraker, Pennsylvania State University: Harvard Graduate School of Business.

Helmut J. Frank: assistant professor of economics, College of Business and Public Administration, University of Arizona.

Peter Frevert: instructor in economics, DePauw University.

Albert Frey: professor of marketing, Graduate School of Business, University of Pittsburgh.

Ronald Geddes, tax adviser for the Federation of Malaya: tax administration specialist, Brookings Institution Economic Specialists Group with the Republic of Vietnam, Saigon.

Walter Gensurowsky: research associate, department of economics, Iowa State University.

Edward Greenberg: instructor in economics, University of Wisconsin, 1961-62.

Oliver F. Guinn: assistant professor of economics, Washburn University.

Raymond M. Haas, Indiana University: assistant professor of marketing, West Virginia University.

Marshall M. Hall: instructor in economics, University of Wisconsin, 1961-62.

Joseph E. Hampton: professor of accounting, School of Business Administration, American University.

Joseph E. Haring: Brookings research professor in economics, Occidental College, 1961-62.

Paul T. Hartman, University of California, Berkeley: assistant professor of economics, Stanford University.

David G. Hayes, Brown University: instructor in economics, Pennsylvania State University.

James E. Hibdon, Texas A. and M. College: associate professor of economics, University of Oklahoma.

Edmund R. Hill, University of Pittsburgh: assistant professor, department of economics, Gettysburg College.

Karel Holbik: associate professor of economics, Boston University.

Charles C. Holt, Carnegie Institute of Technology: professor of economics, University of Wisconsin.

Franklyn D. Holzman, University of Washington: Tufts College.

George R. Horton, Jr., University of Virginia: assistant professor of economics, College of Business Administration, University of Georgia.

David S. Huang: assistant professor of economics, University of Texas.

John J. Hughes: associate professor of economics, Boston University.

Raymond F. D. Hutchings: lecturer in economics, University of Maryland.

Boris Ischboldin: professor of economics, School of Commerce and Finance, Saint Louis University.

Edward B. Jakubauskas: instructor in economics, University of Wisconsin, 1961-62.

Edward J. Kane, Iowa State University: assistant professor of economics, Princeton University.

Saul Katz: associate professor of economic and social development, Graduate School of Public and International Affairs and associate professor of agricultural economics, Division of the Social Sciences, University of Pittsburgh.

Robert W. Kautz: visiting associate professor of economics, University of Saskatchewan, 1961-62.

Erwin L. Kelly: assistant professor of economics, University of California, Los Angeles.

Dominic N. Khactu: assistant professor of economics, University of North Dakota.

Gilbert Klose: assistant professor of economics, Earlham College.

Ahmed Kooros: assistant professor of economics, Rutgers—The State University.

Yehuda Kotowitz: assistant professor of political economy, Johns Hopkins University.

John Kreidle, University of Arkansas: Parsons College, Fairfield, Iowa.

John M. Kuhlman, University of Cincinnati: associate professor of economics, University of Missouri.

Kelvin J. Lancaster: visiting professor of economics, Brown University, 1961-62.

L. Leitch, Great West Life Assurance Co.: associate professor of finance, University of Alberta.

Kari Levitt: lecturer in economics, McGill University, 1961-62.

Irving O. Linger, Texas College of Arts and Industries: associate professor, department of economics, Texas A. and M. College.

James Longstreet: lecturer in finance, Wharton School, University of Pennsylvania.

Raymond C. Malley, Texaco Oil Inc.: consultant, Development Loan Fund.

Garth Mangum: associate professor of economics and member of the graduate business faculty, Brigham Young University.

Robert K. Mann: instructor, department of economics, Iowa State University.

Philip Marcus: assistant professor of economics, University of North Dakota.

Gordon A. Marker: lecturer, department of economics, Rutgers—The State University.

Melvin T. McClure: assistant professor of business and economics, University of Maine.

Stephen L. McDonald, Louisiana State University: professor of economics, University of Texas.

Ronald I. McKinnon, Syracuse University: assistant professor of economics, Stanford University.

Jack Melitz, University of Virginia: lecturer, University of California, Los Angeles, 1961-62.

Joseph J. Melone: assistant professor of insurance, Wharton School, University of Pennsylvania.

Morris Mendelson: associate professor of finance, Wharton School, University of Pennsylvania.

Charles W. Meyer: instructor, department of economics, Iowa State University.

Arthur C. Meyers, Jr.: professor of economics, School of Commerce and Finance, Saint Louis University.

Merton H. Miller: professor of finance and economics, Graduate School of Business, University of Chicago.

David B. Mirza, Northwestern University: instructor in economics, Dartmouth College.

Herbert Mohring, Northwestern University: associate professor of economics, University of Minnesota.

Amos M. Moore: assistant professor, department of economics, Rutgers—The State University.

R. Joseph Monsen: assistant professor of economics and member of the graduate business faculty, Brigham Young University.

Daniel C. Morgan, Jr.: assistant professor of economics, University of Texas.

George G. S. Murphy, Stanford University: assistant professor of economics, University of California, Los Angeles.

Edward Nadel: assistant professor of business and economics, University of Maine.

J. Russell Nelson: lecturer in finance, University of Minnesota.

Peter K. Newman, University College of the West Indies: professor of economics, University of Michigan.

M. B. Nicholson, Massachusetts Institute of Technology: assistant professor of economics, Carnegie Institute of Technology.

Herbert R. Northrup: professor of industry, Wharton School, University of Pennsylvania.

Bernard Okun, Princeton University: associate professor of economics, Queens College.

Daniel Orr: assistant professor of mathematical economics, Graduate School of Business, University of Chicago.

James R. Ott, Jr., Harding College: assistant professor of economics, College of Business Administration, University of Georgia.

Francis X. Owens: associate professor of business administration, School of Business Administration, American University.

Philip C. Packard: assistant professor, University of Maryland.

I. D. Pal, McGill University: assistant professor of economics, Victoria College.

Samuel F. Parigi: assistant professor of economics, La Mar State College of Technology, Texas.

Charles A. Partin: assistant professor of economics, New Mexico State College.

B. Peter Pashigian: visiting assistant professor of economics, Graduate School of Business, University of Chicago.

George L. Perry, Massachusetts Institute of Technology: assistant professor of economics, University of Minnesota.

Robert F. Pethia, Ohio State University: instructor, department of economics and business administration, Duke University.

Robert B. Pettengill, American University of Beirut: professor of economics, Delta College, Saginaw, Michigan.

I. James Pikle, Jr., Southern Methodist University: associate professor of economics, College of Business Administration, University of Georgia.

Robert Piron, Iowa State University: instructor in economics, Oberlin College.

Robert J. Pratt: instructor in business administration, Graduate School of Business, University of Pittsburgh.

Charlotte A. Price: lecturer in economics, Barnard College.

B. Robert Rafferty: assistant professor of economics, University of Kansas City.

Robert W. Resek: assistant professor, department of economics, University of Illinois.

Clark Reynolds: assistant professor of economics, Occidental College.

Leonard Rico: assistant professor of industry, Wharton School, University of Pennsylvania.

Warren C. Robinson, Outdoor Recreation Resources Review Commission: assistant professor of economics, Pennsylvania State University.

B. Rollins: assistant professor of finance, Faculty of Commerce, University of Alberta.

Nathan Rosenberg, Wharton School, University of Pennsylvania: associate professor of economics, Purdue University.

Kenneth J. Rothwell: visiting assistant professor of economics, Dartmouth College.

Stephen W. Rousseas: visiting associate professor, Cornell University, 1961-62.

Carl W. Rudelius: lecturer in marketing, University of Minnesota.

Milton Russell, Iowa State University, Ames: assistant professor, department of economics, Texas Christian University.

A. O. Saffel; associate professor of accounting, University of Alberta.

Bernard Saffran: assistant professor, department of economics, University of California, Berkeley.

Henry Sanborn: department of economics, City College of New York.

Ryuzo Sato: assistant professor, University of Washington, for two years.

Constance C. Schnabel, Northwestern University: instructor in economics, Iowa State University.

Morton Schnabel, Northwestern University: instructor in economics, Iowa State University.

Charles L. Schultze: associate professor, University of Maryland.

Stanley J. Shapiro: lecturer in marketing, Wharton School, University of Pennsylvania.

Page Sharp: instructor in economics, University of Alabama.

Arthur O. Sharron, Duquesne University: professor of management, C. W. Post College, Long Island University.

Hale T. Shenefield, International Cooperation Administration: staff of Inter-American Development Bank, Division of Technical Assistance.

William O. Shropshire: assistant professor of economics, Emory University.

Barry N. Siegel, University of Utah: associate professor of economics, University of Oregon.

C. F. Smythe: visiting lecturer in industrial relations, University of Minnesota, 1961-62.

Benson Soffer, University of Pittsburgh: associate professor of industry, Wharton School, University of Pennsylvania.

Harold M. Somers, University of Buffalo: professor of economics, University of California, Los Angeles.

Louis M. Spadaro: professor of economics, Fordham University.

Alan A. Spiro: department of economics, City College of New York, 1961-62.

Robert M. Stern, Columbia University: assistant professor of economics, University of Michigan.

Anthony H. Stocks, University of Buffalo: assistant professor of economics, College of Commerce, West Virginia University.

Vladimir L. Stoikov: assistant professor of economics, Wesleyan University.

Charles B. Straut: instructor in economics, Princeton University.

Craig Stubblebine: assistant professor of economics, University of Virginia, 1961-62.

Edward Sussna: associate professor of managerial economics, Graduate School of Business, University of Pittsburgh.

Henry Tenenbaum: member of international panel invited by government of Turkey to study state economic enterprises, under ICA sponsorship.

Paul T. Therkildsen, University of Omaha: project associate, workshop on public finance and income distribution, University of Wisconsin, 1961-62.

Judith G. Thornton, Syracuse University: assistant professor, University of Washington, 1961-62.

John J. Treacy, Tulane University: assistant professor of economics, Texas A. and M. College.

Yien-I Tu: instructor in economics, University of Saskatchewan, 1961-62.

Melville J. Ulmer: professor of economics, University of Maryland.

M. Vance, Department of National Revenue, Saskatoon: assistant professor of accounting, University of Alberta.

Jose Vergara: lecturer in economics, University of Virginia, 1961-62.

Felipe S. Viscasillas: Special Assistant for Economic Affairs to the Governor of Puerto Rico.

William D. Wagoner: assistant professor of economics, University of Wyoming.

Caron R. Waits: assistant professor of economics, Northwestern State College, Natchitoches, Louisiana.

Stanley L. Warner: assistant professor of business, Northwestern University.

Paul Weinstein: assistant professor of economics, University of Pittsburgh.

Edward L. Whalen: lecturer, department of economics, Indiana University.

Simon N. Whitney, Federal Trade Commission: professor of economics, Rutgers—The State University.

Billy H. Wilkins: assistant professor of economics, Oregon State University.

G. Winters, Ontario Department of Agriculture: assistant professor of marketing, University of Alberta.

Richard B. Wirthlin, University of California, Berkeley: assistant professor of economics, Brigham Young University.

James G. Witte, Jr., University of Pittsburgh: assistant professor, Indiana University.

Robert J. Wolfson, University of California, Los Angeles: project director, Los Angeles Research Center, C-E-I-R Inc.

Joseph Zaremba, New York State College of Forestry: associate professor of economics, Fordham University.

Arnold Zellner, University of Washington: University of Wisconsin.

Leaves for Special Appointments and Assignments

Michael Albery, Boston College: special U.N. economic adviser to government of Paraguay, June 1961 to June 1962.

Henry G. Aubrey, Council on Foreign Relations: visiting professor of international economic relations, Columbia University.

Friedrich Baerwald: guest professor, University of Muenster, West Germany, 1961-62.

Bela Balassa, Yale University: visiting assistant professor, department of economics, University of California, Berkeley, 1961-62.

W. L. Baldwin, Dartmouth University: visiting assistant professor, Princeton University, 1961-62.

Dwight S. Brothers, Rice University: visiting professor, Center for Advanced Study, Brookings Institution, 1961-62.

James M. Buchanan, University of Virginia: Fulbright visiting professor, Cambridge University, 1961-62.

Philip Cagan, Brown University: visiting associate professor of economics, Carnegie Institute of Technology, 1961-62.

Robert Campbell, University of Oregon: lecturer, Trinity College, Dublin, Ireland.

Joseph R. Cammarosano: fiscal economist, Bureau of the Budget.

Reynold E. Carlson, Vanderbilt University: Vargas Foundation in Brazil, 1961-62.

Frank C. Child, Michigan State University: visiting associate professor of economics, Stanford University, 1961-62.

Meredith O. Clement, Dartmouth College: visiting assistant professor, department of economics, University of California, Berkeley, 1961-62.

William P. Dillingham, Florida State University: Fulbright award to lecture in Spanish at the University of Madrid and the University of Barcelona, 1961-62.

Robert Ferguson, New York State School of Industrial and Labor Relations: lecturer, department of economics, University of Leicester, England.

Nicholas Georgescu-Roegen, Vanderbilt University: Vanderbilt-Overseas professor at Osaka University and Hitotsubashi University beginning February 1962 for one year.

Carter Goodrich, Columbia University: University of Buenos Aires, Argentina, 1961-62.

Challis A. Hall, Yale University: staff of the National Bureau of Economic Research beginning July 1, 1961 for one year.

John C. Hause, University of Chicago: visiting assistant professor of economics, University of Minnesota for the academic year 1961-62.

Albert O. Hirschman, Columbia University: Twentieth Century Fund for the academic year 1961-62.

Wayne E. Howard, Wharton School, University of Pennsylvania: assistant to the director of the Federal Mediation and Conciliation Service.

Alexandre Kafka, University of Virginia: director of research program in economic development, Brazilian Institute of Economics, 1961-62.

Harry C. Kahn, Rutgers University: to participate in a study dealing with Taxation Policy for Economic Growth conducted by the National Bureau of Economic Research, July 1, 1961 to January 31, 1962.

Reuben A. Kessel, University of Chicago: staff of the National Bureau of Economic Research for one year beginning September 1, 1961.

Stanley Lebergott, Bureau of the Budget: visiting professor of economics, Stanford University, 1961-62.

Arthur Leigh, Reed College, Oregon: visiting professor, department of economics, University of California, Berkeley, 1961-62.

John M. Letiche, University of California, Berkeley: special technical advisor, the U.N. Economic Commission for Africa, in Addis Ababa, Ethiopia, 1961-62.

Edwin H. Lewis, University of Minnesota: Fulbright award to lecture at the University of Madrid and the University of Barcelona, Spain, 1961-62.

Jesse W. Markham, Princeton University: visiting professor, Harvard University, 1961-62.

Thomas Mayer, Michigan State University: visiting associate professor, department of economics, University of California, Berkeley, 1961-62.

Joseph P. McKenna, Boston College: visiting lecturer, Bologna, Italy Center, School of Advanced International Studies, Johns Hopkins University, for two years.

Henry S. Miller, Queens College: Fulbright award to lecture in economic statistics at Ankara University, Turkey, 1961-62.

William H. Nicholls, Vanderbilt University: visiting professor of economics, Harvard University, 1961-62.

Anthony Pascal, The RAND Corporation: economics department, University of Nuevo Leon, Monterrey, Mexico, 1961-62.

Don Patinkin, Hebrew University, Jerusalem: visiting research professor, department of economics, University of California, Berkeley, 1961-62.

Frank C. Pierson, Swarthmore College: research professor, Brookings Institution, 1961-62.

Giulio Pontecorvo, Bowdoin College: visiting assistant professor, University of Washington, 1961-62.

Jacob Schmookler, University of Minnesota: Harvard University 1961-62.

Arthur Schweitzer, Indiana University: Fulbright professorship at the Free University of Berlin.

Donald D. Steward, Ohio State University: agricultural economist, Ohio State contract team, India, for two years.

Richard J. Ward, Long Island University: program economist, ICA mission at Amman, Jordan.

Melvin I. White, Brooklyn College: staff of the National Bureau of Economic Research beginning July 1961 for one year.

Leland B. Yeager, University of Virginia: visiting professor, Southern Methodist University, second semester of current academic year.

H. Edwin Young, University of Wisconsin: Harvard Advisory Commission to the government of Pakistan, 1961-62.

Resignations

John D. Coupe: University of Maine.

Frank B. Gopen: Babson's Reports, Inc.

Bernard P. Herber: University of Arizona.

Jules Joskow: City College of New York.

Arthur Kruger: Wharton School, University of Pennsylvania.

Robert C. Ortner: Wharton School, University of Pennsylvania.

Miscellaneous

Lawrence R. Klein: recipient of Golden Plate award from the Academy of Achievement, Monterey, California, September 1961.

Frank H. Knight: recipient of Golden Plate award from the Academy of Achievement, Monterey, California, September 1961.

Frederick C. Mills, Hepburn Professor of Economics, Emeritus, Columbia University: awarded Honorary Doctor of Laws degree, Columbia University, June 1961.

Theodore O. Yntema, Ford Motor Company: elected chairman of Research and Policy Committee of the Committee for Economic Development.

FIFTY-EIGHTH LIST OF DOCTORAL DISSERTATIONS IN POLITICAL ECONOMY IN AMERICAN UNIVERSITIES AND COLLEGES

The present list specifies doctoral degrees conferred during the academic year terminating June 1961, and theses undertaken in the same period.

General Economics; Methodology

Theses in Preparation

- BLAISE F. REINHARDT, B.B.A. St. Bonaventure 1949; M.A. Catholic 1958. The contributions of Richard Jones to economic methodology and theory. *Catholic*
- WILLIAM WHITE, M.S. Columbia 1947. The economics of communication and the modern pluralistic society. *Georgetown*.
- MURRAY WOLFSON, B.S. City 1948; M.S. Wisconsin 1954. Criteria of meaning in economic theory. *Wisconsin*.

Price and Allocation Theory; Income and Employment Theory; History of Economic Thought

Degrees Conferred

- RICHARD H. DAY, Ph.D. Harvard 1961. Recursive programming and production response.
- LOUIS DE ALESSI, Ph.D. California (Los Angeles) 1961. Uncertainty and the redistribution of wealth by inflation; an empirical test with United Kingdom data (1948-1957).
- PHOEBUS DERYMES, Ph.D. Mass. Inst. Technology 1961. Resource allocation implications and measurement of sectoral productivity parameters in a multi-sectoral economy.
- LOUIS A. DOW, Ph.D. Indiana 1960. A critical evaluation of the wage theories and wage policies of the Chicago School.
- JOSEPH EGAN, Ph.D. Georgetown 1961. Qualitative economic changes in secular inflation.
- ZBIGNIEW M. FALLENBUCHL, Ph.D. McGill 1961. Capital accumulation and allocation in the Communist system.
- GARY FROMM, Ph.D. Harvard 1961. Prices, profits and productivity.
- ARTHUR I. GRANT, Ph.D. Pennsylvania 1961. Wage and non-wage shares in business product, 1899-1929.
- JAMES G. HILTON, Ph.D. Iowa (Ames) 1960. An application of inventory theory to farm equipment repair parts.
- SHERMAN R. KRUPP, Ph.D. California (Berkeley) 1961. A critique of organization theory.
- YOSHIRO KURATANI, Ph.D. California (Los Angeles) 1961. Test of anticipated inflation: an empirical study.
- RONALD I. MCKINNON, Ph.D. Minnesota 1961. The employment of labor and the cost of capital in manufacturing industries as they are related to wage changes and technological progress.
- ALBERT A. MONTGOMERY, Ph.D. Iowa 1960. An evaluation of the balance sheet approach to the theory of the firm.
- AMOS M. MOORE, Ph.D. North Carolina 1961. The use of Engel curves as welfare indicators.
- GERALD L. NORDQUIST, Ph.D. Iowa 1960. Activity analysis and the theory of the firm.
- WALTER Y. OI, Ph.D. Chicago 1961. Labor as a quasi-fixed factor of production.
- FRANK PETRELLA, Jr., Ph.D. Notre Dame 1961. Edmund Burke and classical economics.

- ROBERT W. RESEK, Ph.D. Harvard 1961. Neutrality of technical change and aggregate production.
- THOMAS R. SAVING, Ph.D. Chicago 1960. The estimation of the optimal scale of enterprise.
- FREDERICK C. SCHADRACK, Ph.D. California 1961. The determinants of expenditures on commercial construction in the United States, 1920-1955.
- HOWARD J. SHERMAN, Ph.D. California (Berkeley) 1960. Profit rates: relation to cyclical fluctuations and corporate size, U.S.A., 1931-1958.
- EUGENE SMOLENSKY, Ph.D. Pennsylvania 1961. Some factors affecting the location of economic activity and the size distribution of income.
- JOSEPH L. TRYON, Ph.D. Harvard 1961. Factors which influence the behavior of business inventories.
- THOMAS A. WILSON, Ph.D. Harvard 1961. The inflationary process in the machinery sector.

Theses in Preparation

- NASSAU A. ADAMS, B.Com.Sc., Queens Univ. 1958; M.A. Harvard 1960. The structure of imports, capital formation, and economic growth. *Harvard*.
- HARVEY A. AVERCH, B.A. Colorado 1958. Growth models subject to welfare constraints. *North Carolina*.
- RONALD G. BODKIN, B.A. Swarthmore 1957; M.A. Pennsylvania 1959. Some macro-economics of wages and prices. *Pennsylvania*.
- ALBERT A. FITZPATRICK, B.S. Southern California 1949; M.B.A. 1951; M.S. Baylor 1956. A comparative analysis of the pricing methods of selected manufacturing industries. *Southern California*.
- SEANO D. GERVASI, B.A. Oxford 1956; M.A. 1960. Welfare theory and the concept of economic surplus. *Cornell*.
- JOEN T. HOUK, JR., B.A. Brown 1955; M.A. Swedish Univ. Econ. (Finland) 1956. Problem of consumer spending and saving: a theoretical study. *American*.
- M. Bruce Johnson, B.A. Carleton 1955; M.A. Northwestern 1960. New theories of the consumption function and the demand for consumer durable goods; some empirical tests. *Northwestern*.
- ROBERT L. KARG, B.S. Ohio 1954; M.A. 1955. A theory of crude oil prices; a study of vertical integration and percentage depletion allowance. *Pittsburgh*.
- J. DANIEL KHAZZOOM, B.S. Tel-Aviv 1957. Growth without inflation. *Harvard*.
- MUNIDASA C. KODIKARA, B.S. Ceylon 1949; M.Sc. Cambridge 1953. Resource allocation under uncertainty; case of a primary goods producing country. *Stanford*.
- YEHUDA KOTOWITZ, B.A. Hebrew 1956. Pricing and output in oligopoly, cartels and monopoly. *Chicago*.
- MORDECHAY KURZ, B.A. Hebrew 1957; M.A. Yale 1958. Capital valuation in a two-sectors growth model. *Yale*.
- GRAHAM C. McLAREN, B.Com. Melbourne 1955. The relation of corporate investment to retained earnings. *Yale*.
- PETER MIESZKOWSKI, B.S. McGill 1957; M.A. 1959. Distribution theory. *Johns Hopkins*.
- THOMAS S. MORI, B.A. Kobe 1952. The theory of supply and demand in English classical economics—from Smith to Cairnes. *Catholic*.
- CHIKASHI MORIGUCHI, B.A. Kyoto 1956; M.A. 1958. An econometric analysis of inventory behavior. *Michigan*.
- ROY E. MURPHY, JR., B.S. Purdue 1950; M.S. Connecticut 1956. The effects of adaptive processes on economic decisions. *Stanford*.
- ROBERT NEUBECK, M.A. St. Louis 1953. The sales maximization hypothesis: a re-examination. *Georgetown*.

- RICHARD E. PASTERNAK, B.S. Holy Cross 1957; M.A. Louisiana State 1959. Jeremy Bentham as an economist. *Alabama*.
- N. GOPALAKRISHNA PILLAI, B.A. Delhi 1951; M.A. 1953. Investment allocations and economic growth. *McGill*.
- T. M. RUSSELL, B.Sc. London 1957; M.A. Toronto 1960. Some aspects of the relationship between profits, growth and concentration. *Toronto*.
- SCOTT E. SEAGER, B.A. Texas 1942; M.A. 1947. The influence of leverage on the cost of capital. *Indiana*.
- LEWIS SHIPPER, B.A. Wayne 1956; M.A. 1958. An analysis of consumer behavior from time series cross-section data. *Michigan*.
- GERARDO P. SICAT, B.S.F.S. Philippines 1957; M.A. 1958. Linear theory and resource allocation (with special applications to development economics). *Mass. Inst. Technology*.
- VINCENT D. TAYLOR, B.S. Calif. Inst. Technology 1958. Technical progress in a two-sector capital theory model. *Mass. Inst. Technology*.
- BRIAN R. VAN ARKADIE, B.S.C. London School Econ. 1955; M.B.A. Dartmouth 1957. A study of the demand for investment goods by the United States steel industry. *California (Berkeley)*.
- ANDREW WHINSTON, B.A. Michigan 1957; M.S. Carnegie Inst. Technology 1959. A theory of decision making under uncertainty. *Carnegie Inst. Technology*.
- MENACHEM E. YAARI, B.A. Hebrew 1958. Problems of allocation and decision making under uncertainty. *Stanford*.
- JOSEPH ZRINYI, M.A. Montreal. Entrepreneurial motivation in economic theory: historical and analytical approach. *Georgetown*.

Economic History; Economic Development; National Economies

Degrees Conferred

- HAMEED AL-QAYSI, Ph.D. Columbia 1961. An economic appraisal of Iraq petroleum concessions—a comparative study.
- RALPH L. ANDREANO, Ph.D. Northwestern 1960. Emergence of new competition in the petroleum industry before 1911.
- LAWRENCE BARSS, Ph.D. Mass. Inst. Technology 1961. Political change and economic growth: a methodology applied to Japan, Turkey, and India.
- JOHN A. BOTTOMLEY, Ph.D. Virginia 1961. Agricultural credit in Tripolitania.
- CHARLES A. COOPER, Ph.D. Mass. Inst. Technology 1960. Agriculture, labor surplus, and foreign trade in Bulgaria, 1925-1960.
- WILLIAM I. DAVISSON, Ph.D. Cornell 1961. The impact of electric power on the economic development of the Pacific Northwest.
- DANIEL J. EDWARDS, Ph.D. Virginia 1961. Process of economic adaptation in a World War II neutral country: a case study of Sweden.
- MARION FORRESTER, Ph.D. Bryn Mawr 1961. Capital formation in Kenya.
- CHARLES C. FROST, Ph.D. Fletcher School 1961. The economic development of Communist China: a case study in the application of Soviet development doctrine to a labor-surplus economy.
- M. NAZEM HAIDAR, Ph.D. Pennsylvania 1961. The economic process in selected Arab countries—prospects and fulfillment.
- JOHN E. HALDI, JR., Ph.D. Stanford 1961. Economies of scale in economic development.
- MOHAMMED P. HASAN, Ph.D. Yale 1961. Inflation and balance of payments: experience of Pakistan, 1951-59.
- EDMUND R. HILL, Ph.D. Pittsburgh 1961. A comparative study of the U.S. and Canadian economies based on selected key indicators—1929 to 1956.

- ELIYAHU KANOVSKY, Ph.D. Columbia 1961. The economy of the Israeli Kibbutz (Commune).
- MICHAEL J. KAVANAGH, Ph.D. Fordham 1961. An application of growth-model concepts to the programming of development in the Irish economy.
- AGUSTIN L. KINTANAR, JR., Ph.D. Yale 1961. An analysis of the effects of certain modifications in the tax structure on the rate of economic development of the Philippines.
- HEINZ KOHLER, Ph.D. Michigan 1961. East Germany's economic integration into the Communist bloc.
- MARVIN E. LEE, Ph.D. North Carolina 1961. Industrialization, land tenure and the birth rate in the Southeast.
- KULDIP S. MALI, Ph.D. Indiana 1960. Financing economic development of Burma since independence.
- JACOB P. MEERMAN, Ph.D. Chicago 1961. Nicholas Biddle on central banking.
- IVO MORAVCIK, Ph.D. Indiana 1959. The great desideratum: the Soviet search for industrial expansion.
- JOHN J. MURPHY, Ph.D. Yale 1961. The establishment of the American clock industry: a study in entrepreneurial history.
- ALVAN J. OBELSKY, Ph.D. Michigan 1961. Preconditions of economic development: an analysis of the Japanese case.
- CHARLES A. PARTIN, Ph.D. Texas 1961. Roots of state entrepreneurship in Australia, Canada, and the United States: a comparative study.
- H. C. PENTLAND, Ph.D. Toronto 1961. Labour in Canada in the early 19th century.
- ABDUL QADIR, Ph.D. Clark 1961. Take-off to self-sustained economic growth: problems and prospects of Pakistan.
- RIAZUR RAHMAN, Ph.D. Pennsylvania 1961. Selected problems in the rapid development of the cotton textile industry in Pakistan.
- THEODORE K. RUPRECHT, Ph.D. California (Berkeley) 1961. The demographic factor in Egyptian economic progress.
- MANSOUR SADRI, Ph.D. Pennsylvania 1961. Economic planning in Iran—a study of entrepreneurial problems during economic growth.
- KINICHIRO SAKURAI, Ph.D. Syracuse 1961. Financial aspects of economic development of Japan from 1868 to present.
- EZZEDIN M. SHAMSIDEN, Ph.D. Florida 1960. The economic impact of development: a case study of the Litani river and other projects in Lebanon.
- DONALD G. TAILBY, Ph.D. Rutgers 1961. Chapters from the business career of William Constable: a merchant of post-revolutionary New York.
- PHILIP S. THOMAS, Ph.D. Michigan 1961. Capital intensity and the theory of technical choice with special reference to India.
- WILLIAM D. WAGONER, Ph.D. Texas 1961. The non-free worker in post Civil War American history.
- NETIASASTRO WIDJOJO, Ph.D. California (Berkeley) 1961. Migration, population growth, and economic development in Indonesia: a study of the economic consequences of alternative patterns of inter-island migration.

Theses in Preparation

- DONALD W. BAERRESEN, B.A. Occidental 1950; M.A. California (Los Angeles) 1961. The effectiveness of multiple exchange rate systems in the economic development of Chile 1946-1958. *California (Los Angeles)*.
- ROBERT BINGHAM, B.A. DePauw 1950. The Deisel locomotive: a study in innovation. *Northwestern*.
- E. J. R. BOOTH, B.S. McGill 1951; M.S. Connecticut, 1953. Economic development in

- eastern Oklahoma until 1950: the impact of a rigid settlement pattern, meager industrialization and agricultural adjustment in a low-income rural area. *Vanderbilt*.
- JOHN D. BOWMAN, B.A. Reed 1957; M.A. Washington 1959. Changes in land values and farm profits in the North Central Midwest, 1870-1900. *Yale*.
- EVANGELOS A. CALAMITSIS, B.A. *American* (Cairo) 1954; M.A. Stanford 1955. International trade and economic development; a study of commercial policy for development in theory and practice with some applications to Egypt. *Harvard*.
- C. V. CALLENDER, B.A. Toronto 1959; M.A. 1960. The West Indies federation: some economic problems and prospects. *Toronto*.
- DAVID J. CANTOR, B.A. Boston 1957; M.A. 1958. Balanced vs. unbalanced growth in Ghana. *Harvard*.
- JOHN C. CHITWOOD, JR., B.A. Texas 1954; M.A. 1956. The conditions for economic progress in Colombia, S.A., and their relation to frontier theory. *Texas*.
- BENJAMIN I. COHEN, B.A. Harvard 1958. Indian export promotion. *Harvard*.
- MARCIA DAVIDSON, B.A. Mount Holyoke 1957. The economic enlightenment in Spain. *Duke*.
- MANORANJAN DUTTA, B.A. Calcutta 1946; M.A. 1950. Some econometrics about the foreign sector of Indian economy. *Pennsylvania*.
- ATEYAT FARAG, B.Com. Cairo 1956. Problems of economic integration: a case study of the Egyptian-Syrian Union. *Michigan*.
- NOEL J. J. FARLEY, B.Com. University College, Dublin 1955; M.A. Yale 1957. Frustrated anticipations: Irish economic progress—an examination of the period 1948-1956. *Yale*.
- DONALD H. FARNES, B.A. Reed 1957. The timing of American industrialization. *Washington*.
- CHARLES P. FISHBAUGH, B.A. Western Reserve 1952; M.A. Ohio 1957. The Howard shipyards of Jeffersonville, Indiana and economic history. *Indiana*.
- RALPH E. FRETTEY, B.A. Iowa 1953; M.A. Drake 1958; M.A. Fletcher School 1959; M.A.L.D. 1960. The role of government in the economic development of underdeveloped countries. *Fletcher School*.
- LOTHAR H. HÜHNE, B.A. Monmouth 1954; M.B.A. Wisconsin 1957. The role of the most important national and international organizations in financing needs of underdeveloped countries. *Wisconsin*.
- MAMORU ISHIKAWA, B.A. Milligan 1957. Industry mix and differential economic growth of Tennessee counties 1950-60. *Vanderbilt*.
- HENRY J. JAROCHE, B.A. Chicago 1947; M.A. Wayne 1949. Financial aspects of economic development in the United States 1787-1825. *Michigan*.
- CHEUL WEUN KANG, B.A. King 1958; M.S. Wisconsin 1960. Indian balance of payments and the five year plans. *Wisconsin*.
- BASHIR A. KARAMALI, B.A. Sind Muslim College 1951; M.A. 1954; M.A. Yale 1958. Entrepreneurship and development: an analysis of Pakistan's industrial growth 1947-57. *Yale*.
- LUBOMYR KOWAL, B.A. St. Francis College 1955; M.B.A. Detroit 1957. The development of the Ukraine 1917-1959. *Illinois*.
- CHRISTOPHER T. KURIEN, B.A. Madras, Tambaram 1953; M.A. 1955. Technology and market structure: an aspect of economic development. *Stanford*.
- DAVID F. LOMAX, B.A. Cambridge 1957; M.A. Stanford 1959. Financial aspects of Peruvian development. *Stanford*.
- GORDON A. MARKER, B.A. Oregon 1955. Internal migration and economic development in France 1872-1911. *Pennsylvania*.
- RAVI MAYOR, B.A. Punjab 1951; M.A. Edinburgh 1956. Watkins Mayor and Co.—A study in industrial and commercial development in India. *Catholic*.

- LACHLAN MCGREGOR, B.Com. Melbourne, 1954; Hansurs degree 1956. The initiation of economic growth in Australia during the nineteenth century. *Northwestern*.
- PETER F. M. McLOUGHLIN, B.A. British Columbia 1951. Comparative factors in the economic development of three East African tribes. *Texas*.
- DONALD C. MEAD, B.A. Haverford 1956; M.A. Yale 1957. Monetary analysis of an underdeveloped economy: a case study of British East Africa. *Yale*.
- ROBERT A. MINICK, JR., B.S. North Texas State 1951; M.S. 1955. The industrialization of Brazil, with special reference to manufacturing. *Texas*.
- WALLACE M. NELSON, B.S. U.S. Naval Academy 1935; M.E.A. George Washington 1957. Florida's economic development 1870-1930. *Florida*.
- STANLEY A. NICHOLSON, B.A. Montana State 1958. Investment criteria and economic development in Ghana. *Duke*.
- RODRIGO A. NUNEZ, B.S. Franklin & Marshall 1955; M.A. Chicago 1960. Factors underlying the under-utilization of resources in Panama. *Chicago*.
- HARRISON PARKER, B.S. Cornell 1944; M.A. Columbia 1948; M.P.A. Harvard 1959. Economic effectiveness of Indian community development program. *Harvard*.
- RUDOLPH PENNER, B.Com. Toronto 1958. International influences on the effectiveness of stabilization policy in Canada. *Johns Hopkins*.
- GORDON K. PIERSON, B.B.A. Washington 1952. A study of the relationship between literacy and economic growth. *Washington*.
- BRAHMANAND PRASAD, B.Com. Razendra College 1944; M.Com. Allahabad 1946. The Keynesian apparatus in Indian planning for capital formation. *Tulane*.
- MARTIN PRIMACK, B.S. Pennsylvania State 1953; M.A. Maryland 1958. Farm formed capital in American agriculture 1840-1910. *North Carolina*.
- B. ROBERT RAFFERTY, B.B.A. New Mexico 1950; M.A. 1954. The bearing of political changes on economic development in Bolivia. *Texas*.
- CLARK W. REYNOLDS, B.A. Claremont 1956. Historical and developmental relationships of the copper industry to the economy of Chile. *California (Berkeley)*.
- JIMMY R. RINEHART, B.S. Newberry 1958. Measuring rates of return on industrial subsidization. *Virginia*.
- ALBERT J. ROBINSON, B.Com. Melbourne 1949; B.A. Canberra 1953. Some aspects of economic growth in Australia, 1946-59. *Duke*.
- GEORGE B. SIMMONS, B.A. Louisville 1953; M.B.A. Indiana 1957. A theoretical framework for the evaluation of market potential in underdeveloped countries. *Indiana*.
- LITTLETON W. SIMPSON, B.A. Randolph Macon 1950. Conflicts of interest in changing economic structures in the South. *Virginia*.
- PRITAM SINGH, B.A. Punjab 1939; M.A. Michigan 1950. Price policy for economic development with special reference to India. *Michigan*.
- WILLIAM P. SMITH, B.A. Drury 1956. The American firearms industry 1870-1910. *Northwestern*.
- IAN A. STEWART, B.A. Queens 1954; M.A. Oxford 1956. A quarterly econometric model of the Canadian economy 1946-1961. *Cornell*.
- RICHARD H. TILLY, B.A. Wisconsin 1955. Private banking and the industrialization of Germany in the nineteenth century. *Wisconsin*.
- JOHN A. TOMASKE, B.A. Washington State 1956. International migration and economic development 1860-1914. *Washington*.
- BILLY H. WILKINS, B.B.A. Texas A & I 1956; M.S. 1957. Effects on the economy of Venezuela of actions by the American petroleum industry and regulating agencies. *Texas*.
- PAN A. YGTOPOULOS, Dipl. Athens (Greece) 1955; M.A. Kansas 1957. An analysis and empirical test of disguised unemployment in underdeveloped areas. *California (Los Angeles)*.

Statistical Methods; Econometrics; Social Accounting

Degrees Conferred

- VINCENT E. CANGELOSI, Ph.D. Arkansas 1961. A statistical method of forecasting gasoline consumption at the state level.
- JOHN W. HOOPER, Ph.D. Stanford 1961. Simultaneous equations and correlation theory.
- JAMES L. MCKENNEY, Ph.D. California (Los Angeles) 1961. Simultaneous multi-programming of electronic computers.
- NEIL R. PAINE, Ph.D. Texas 1961. Mathematical programming in portfolio selection.
- NORMAN B. RUSHFORTH, Ph.D. Cornell 1961. A comparison of sample correlation matrices and a multivariate analysis of job concepts of selected industrial executive groups.
- JOHN C. THOMPSON, Ph.D. Illinois 1961. A critical analysis of the theory, quantification, and uses of regional social accounts, emphasizing the disciplines of economics, business accounting, and geography.

Theses in Preparation

- WILLIAM A. CHANCE, B.S. Kansas 1954; M.A. Kansas 1959. Simulation of behavior of an economic model under different assumptions concerning parameter values and functional relationships. *Kansas*.
- GERALD CHILDS, B.B.A. City 1959. Construction and estimation of a simultaneous equation model of the inventory investment cycle. *Mass. Inst. Technology*.
- RICHARD M. DUVAL, B.S. Clemson 1957. The theory and practice of the measurement of seasonal variation. *North Carolina*.
- JEANNETTE FITZWILLIAMS, B.A. Vassar 1934; M.A. George Washington 1951. Wealth of the wealthy, 1958. *American*.
- MAHFUZUL HUQ, B.A. Dacca 1954; M.A. 1955. Federal government in a system of state income and product accounts. *Washington* (St. Louis).
- ARTHUR P. HURTER, B.S. Northwestern 1956; M.S. 1957. A production function for an industrial process: petroleum refining. *Northwestern*.
- RIKUMA ITO, B.S. Illinois 1956; M.A. 1959. A multivariate analysis of nonsampling errors. *Illinois*.
- NEIL R. PAINE, B.A. Rice 1957; M.B.A. Texas 1959. Selected aspects of applications of mathematical programming in portfolio selection. *Texas*.
- THOMAS ROTHENBERG, B.A. Michigan 1958; M.A. Michigan 1959. Statistical methods for economic forecasting. *Mass. Inst. Technology*.
- HAROLD R. SWENSON, B.S. Illinois Inst. Technology 1950; M.S. 1954. Economic models for design tolerance. *Chicago*.
- GEORGE C. H. TIAO, B.A. National Taiwan Univ. 1955; M.B.A. New York 1958. Statistical inference in economics, Bayes-theoretic solutions. *Wisconsin*.
- STANLEY WARNER, B.S. Northwestern 1950. Stochastic choice of mode in urban travel: a study in binary choice. *Northwestern*.
- LEON WEGGE, Actuary Louvain 1957; Lic. Econ. Sc. 1958; Lic. Comm. Sc. 1955; Bacch. Phil. 1957. Distributed lags. *Mass. Inst. Technology*.

Economic Systems; Planning and Reform; Cooperation

Degrees Conferred

- ALI MOHAMMAD CHAUDHRY, Ph.D. Ohio 1960. The use of a farm management approach in solving agricultural problems in Pakistan.
- GLOM ISARAPANDEH, Ph.D. Wisconsin 1961. A comparison of the legal economic features of competitive organization in the United States and Thailand.
- HERBERT S. LEVINE, Ph.D. Harvard 1961. A study in economic planning: the Soviet industrial supply system.

RAYMOND J. MONSEN, JR., Ph.D. California (Berkeley) 1960. Ideologies of modern American capitalism.

Theses in Preparation

- DONALD G. DAVISON, B.S.C. Iowa 1951; M.A. 1954. The Indian second five year plan. *Iowa*.
- WALLACE A. REHBERG, B.S. Montana State 1949; M.S. 1959. Role of cooperative arrangements in agricultural processing industries. *Wisconsin*.
- LAWRENCE A. RENS, B.S. Wisconsin State 1950. Cooperative business arrangements. *Wisconsin*.
- JOSEPH SKEHAN, B.A. Syracuse 1947. The history of British socialism. *Georgetown*.
- MARVIN J. STERNBERG, B.A. California 1955. Land tenure and land reform in Chile. *California (Berkeley)*.
- ELIAS H. TUMA, B.A. Redlands 1957. Economics, politics, and land reform in selected countries. *California (Berkeley)*.

Business Fluctuations

Degrees Conferred

- WARD S. CURRAN, Ph.D. Columbia 1961. The business community and the policy of full employment.
- RICHARD A. HOLMES, Ph.D. Indiana 1960. An appraisal of the Canadian survey of business investment intentions.
- BENJAMIN SLATIN, Ph.D. New York 1961. Fluctuations in paperboard production.

Theses in Preparation

- CLOPPER ALMON, JR., B.A. Vanderbilt 1956. Consistent forecasting in a dynamic general equilibrium system. *Harvard*.
- NAE HOON CHUNG, B.A. Chungang Univ. (Korea) 1953; M.A. Ball State Teachers 1956. Inflation in Korea; a theoretical analysis. *Michigan State*.
- STANLEY ENGERMAN, B.S. New York 1956; M.B.A. 1958. Regional aspects of stabilization policy. *Johns Hopkins*.
- DAVID G. HAYES, B.A. Clark; M.A. Brown 1959. Postwar corporate velocity. *Brown*.
- ROBERT G. KOKAT, B.S. Pennsylvania State 1956; M.S. 1957. Impact of disarmament on the composition of industry. *Indiana University*.
- THOMAS A. WILSON, B.A. British Columbia 1957; M.A. Harvard 1959. Inflation of machinery prices. *Harvard*.

Money, Credit and Banking; Monetary Policy; Consumer Finance and Mortgage Credit

Degrees Conferred

- DANIEL S. AHEARN, Ph.D. Columbia 1961. Aspects of Federal Reserve policy 1951-1959.
- VERNE S. ATWATER, Ph.D. New York 1961. The Radcliffe Report: implications for United States monetary policy.
- CHARLES C. BAKER, JR., Ph.D. Harvard 1961. Liquidity management in the commercial bank.
- JACK BAME, Ph.D. New York 1961. The Paris money market—changing patterns in French money and finance.

- CHAIM BEN-SHACHAR, Ph.D. New York 1961. Money, banking and monetary policy in Israel.
- NORMAND BERNARD, Ph.D. Boston College 1961. The "bills only" technique of open market operations.
- GEORGE W. BERRY, Ph.D. Texas 1961. Recent mortgage lending trends in Travis County, Texas.
- JAMES R. BOBO, Ph.D. Louisiana 1961. An analysis of the growth of savings and loan associations in the Ninth Federal Home Loan Bank District, 1945-1959.
- WILLIAM R. BRYAN, Ph.D. Wisconsin 1961. Bank purchases of earning assets: a decision unit model.
- DAVID J. CHAMBERS, Ph.D. Carnegie Inst. Technology 1961. Differential effects of credit restriction in periods of high activity.
- ALBERT J. CLIFFORD, Ph.D. Pennsylvania 1961. The independence of the Federal Reserve System.
- LARRY L. CRUM, Ph.D. Texas 1961. Federal regulation of bank holding companies.
- JOHN V. DEEVER, Ph.D. Chicago 1961. The Chilean inflation and the demand for money.
- ADEL EL-GOWHARY, Ph.D. Syracuse 1961. Monetary policy in underdeveloped financial markets.
- DONALD D. HESTER, Ph.D. Yale 1961. An empirical examination of a commercial bank loan offer function.
- OLIVER H. JONES, Ph.D. Pennsylvania State 1961. The secondary market for urban residential mortgages.
- EDWARD J. KANE, Ph.D. Mass. Inst. Technology 1960. The interregional flow of funds in the U.S.: 1955-1958.
- LEONARD LAUDADIO, Ph.D. Washington 1960. The adequacy of bank profits.
- MAW-LIN LEE, Ph.D. Wisconsin 1961. Patterns of installment borrowing by credit buyers of durable goods in 1956 and 1957.
- SEUNG YUN LEE, Ph.D. Wisconsin 1961. Selective credit control for economic development.
- JAMES CHAO-SENG MA, Ph.D. Texas 1960. A study of the People's Bank of China.
- BRUCE K. MACLAURY, Ph.D. Harvard 1961. The Canadian money market, its development and its impact.
- ALEXANDER J. MEIGS, Ph.D. Chicago 1960. Free resources and interest rates in a theory of money supply determination.
- KOJI NAKAGAWA, Ph.D. Syracuse 1961. Moneyflow approach to the analysis of cost-push inflation.
- DAVID J. OTT, Ph.D. Maryland 1960. The financial development of Japan.
- KENNETH D. PATTERSON, Ph.D. Nebraska 1960. Competition between commercial banks and a production credit association: a case study.
- CHARLOTTE D. PHELPS, Ph.D. Yale 1961. The impact of tightening credit on municipal capital expenditures in the United States.
- CLAUS W. RUSER, Ph.D. Mass. Inst. Technology 1960. Essays in monetary analysis.
- RATEB SHALLAH, Ph.D. California (Berkeley) 1960. Unification of the banking system in the United Arab Republic.
- WILLIAM O. UZOAGA, Ph.D. Fordham 1961. An analysis of the monetary and banking system of Nigeria.
- JACK VERNON, Ph.D. Northwestern 1961. Savings and loan response to monetary policies.
- DONALD A. WALKER, Ph.D. Harvard 1961. Nacional Financiera of Mexico.
- ALBERT M. WOJNILEWER, Ph.D. Columbia 1961. Changes in the quality of business loans of commercial banks.

Theses in Preparation

- G. PAUL BALABANIS, B.A. Stanford 1957. Monetary policy, financial competition and bank capital. *Stanford*.
- ROBERT L. BENNETT, B.A. Texas 1951; M.A. Texas 1955. Financial intermediaries in Mexican economic development. *Texas*.
- ERNEST BLOCH, M.A. Columbia 1949. Corporate liquidity preference. *New School*.
- RICHARD L. BOLSTER, B.S. American 1954; M.B.A. New York 1956. Monetary policy and its effect on New York Stock Exchange security prices. *American*.
- EUGENE F. BRIGHAM, B.S. North Carolina 1952; M.B.A. California 1957. The relative position of various intermediaries in the residential mortgage market. *California (Berkeley)*.
- ARTHUR L. BROIDA, B.A. Chicago 1940. "Liquidity" as a variable in monetary analysis. *Chicago*.
- JOHN J. BROSKY, B.S. Lehigh 1956; B.S. Lehigh 1957; M.B.A. Lehigh 1958. Corporate liquidity. *Texas*.
- IVAN T. CALL, B.S. Brigham Young 1958; M.B.A. Indiana University 1959. A study of services which commercial banks perform for large business firms. *Indiana*.
- FREDERICK W. DEMING, B.A. Princeton 1957; M.A. Yale 1958. An empirical study of Federal Reserve discounting. *Yale*.
- ARTHUR R. DORSCH, B.S. Rutgers 1942; M.B.A. American Inter. College 1958. A study of consumer installment credit: the role it plays in the economy and its relationship to monetary policy. *Florida*.
- GENE L. FINN, B.S. Wisconsin 1959. Credit availability to Wisconsin small business. *Wisconsin*.
- JESSE C. FISHER, JR., B.S. Davidson 1953; M.A. Duke 1955. Changes in the thought of certain post-Keynesian monetary economists. *North Carolina*.
- CONSTANCE M. HICKS, B.A. Bryn Mawr 1955; M.A. Fletcher School 1956. Central banking in underdeveloped countries, with special emphasis on three economies: the Union of South Africa, the Central African Federation, and Nigeria. *Fletcher School*.
- SALIM A. HOSS, B.B.A. American (Beirut) 1952; M.B.A. 1957. The roles of central banking in Lebanon. *Indiana*.
- CHARLES HOWARD, B.A. Guilford 1951; M.A. Vanderbilt 1952. Analysis of the commercial banks' role in agricultural credit. *Vanderbilt*.
- CLARENCE J. HUIZENGA, B.A. Hope 1956; M.S. Carnegie Inst. Technology 1958. Alternative bank reserve requirement proposals. *Carnegie Inst. Technology*.
- STEPHEN HUNTER, B.A. Drew 1958. The rationale and effect of the "bills only" policy. *Virginia*.
- ALEXANDER J. KONDONASSIS, B.A. DePauw 1952; M.A. Indiana 1953. Monetary policies of the Bank of Greece 1949-1954; contributions to economic stability and growth. *Indiana*.
- JAMES R. LEAVY, B.A. California (Los Angeles) 1953; M.B.A. 1958. Federal home loan bank advances, policy and the growth of Southern California savings and loan associations: 1950-1959. *California (Los Angeles)*.
- HELEN F. MCHUGH, B.S. Missouri 1958; M.S. 1959. Factors affecting family financial security. *Iowa (Ames)*.
- BENNIE B. MCNEW, B.S. Arkansas State Teachers 1953; M.B.A. Arkansas 1954. Internal controls in commercial banks. *Texas*.
- DONALD G. MEYER, B.A. Blackburn 1956; M.A. Northwestern 1959. The impact of monetary policy on state and local borrowing and capital formation, 1951-1960. *Northwestern*.
- GEORGE R. MORRISON, B.A. Chicago 1950; M.A. 1952. Portfolio behavior of banks. *Chicago*.

- BRUCE H. OLSON, B.A. Wabash 1957; M.B.A. Indiana 1959. Commercial banks: time funds as a source of growth. *Indiana*.
- BARRIE RICHARDSON, B.A. Carleton 1955; M.B.A. Indiana 1956. Regulation of retail-credit patterns and problems. *Indiana*.
- HYMAN SARDI, M.A. Brooklyn 1959. The determinants of corporate savings. *New School*.
- PAUL J. L. SCHATZ, B.S. Alabama 1934; M.S. 1935; L.L.B. Jones 1942. The development of credit unions in Alabama. *Alabama*.
- GREGORY P. SPYROPOULOS, B.A. Athens (Greece) 1956. Banking for development. *Harvard*.
- EDWARD J. STEVENS III, B.A. Haverford 1957; Yale 1959. The determinants of deposits and mortgage loans at savings and loan associations. *Yale*.
- BASILIOS E. TSAGRIS, B.S. California 1948; M.S. Southern California 1956. The economic impact of savings and loan associations on residential construction in the Sacramento area. *Southern California*.
- RICHARD C. WAITS, B.A. Trinity 1949; M.A. Texas 1951. Monetary and financial developments in Venezuela in the post-war period. *Texas*.
- WALLACE G. WEBB, B.S. Auburn 1956. An empirical study of offsetting changes in velocity by adjustment in the money supply. *North Carolina*.
- JOHN F. ZOELLNER, B.A. Kansas 1957. A cost study of commercial banking. *Harvard*.
- JAMES A. ZWERNEMAN, B.A. Stanford 1950; M.A. 1959. Development of credit unions in Massachusetts. *Notre Dame*.

Public Finance; Fiscal Policy

Degrees Conferred

- DAVID A. BAERNCOFF, Ph.D. Stanford 1961. Regional interest rates: municipal bonds in California, 1900-1957.
- LAURIE D. BELZUNG, Ph.D. Texas 1961. Economic implications of state fiscal dependence on oil and natural gas taxation in Texas.
- DAVID BERNSTEIN, Ph.D. New York 1961. Budgeting in New York City.
- RICHARD M. BIRD, Ph.D. Columbia 1961. Investment and initial allowances under British income tax.
- GEORGE A. BISHOP, Ph.D. Toronto 1961. Debt management as an instrument of compensatory policy in Canada 1946-1960.
- GERALD BOYLE, Ph.D. Syracuse 1961. Economic aspects of charge-financing local government services.
- ELIZABETH L. DAVID, Ph.D. Michigan 1961. Public preferences and the tax structure.
- HAROLD M. GOLDSTEIN, Ph.D. Clark 1961. The impact of federal income disbursements on the southeastern states, 1929, 1939, 1949, and 1957.
- THOMAS F. HADY, Ph.D. Minnesota 1961. An analysis of the distribution of the Minnesota personal property tax.
- JOHN D. HELMBERGER, Ph.D. Minnesota 1960. State and local taxation of banks.
- GEORGE W. JENNINGS, Ph.D. Virginia 1961. The fiscal history of Virginia from 1860 to 1870.
- ARTHUR H. JOHNSON, Ph.D. Northwestern 1961. Federal income taxation of patents and copyrights.
- H. R. MACHIRAJU, Ph.D. Indiana 1961. Tax policy and economic development in India with special reference to the 1954-1959 tax reforms.
- ROBERT F. MELVILLE, Ph.D. Harvard 1961. Taxation of corporations in Massachusetts 1925-1952.
- VERNON G. MORRISON, Ph.D. Nebraska 1961. The Illinois full value assessment legislation of 1945 relevant to uniformity in valuation of real estate under the general property tax.

- ALAN P. MURRAY, Ph.D. Columbia 1961. British and American systems of income tax withholding.
- ROY G. POULSEN, Ph.D. Clark 1961. The evolution of the Rhode Island budget process.
- ABDEL M. A. RAHMAN, Ph.D. Indiana 1960. Egyptian income taxation of nonresident aliens and foreign corporations and its effects on Egyptian economic growth.
- ROBERT H. SCOTT, Ph.D. Harvard 1961. Debt-management for economic stability.
- HARVEY A. SHAPIRO, Ph.D. Wisconsin 1961. Financing local government in metropolitan areas: a case study of Madison, Wisconsin.
- DONALD F. SWANSON, Ph.D. Florida 1960. The origins of Hamilton's fiscal policies.
- JOHN E. THOMPSON, Ph.D. Wisconsin 1961. Financing public education in South Dakota.
- RICHARD W. TRESTRAIL, Ph.D. Washington 1961. An analysis of alternative methods of forest taxation: their effects on real forest investment and social value yields not subject to capture by the owner.

Theses in Preparation

- RAMINENI AYYANNA, B.Sc. Andhra 1950; M.Sc. Banaras Hindu 1953; M.A. Minnesota 1957. Comparative analysis of Kaldor Indian tax reforms and Shoup Japanese tax reforms. *Minnesota*.
- KENNETH E. DAANE, L.L.B. Colorado 1948. The legal implications and economic effects: allocation problems in state corporate net income tax. *Colorado*.
- BRUCE F. DAVIE, B.A. Pomona 1958. Municipal bond underwriting—19th century. *Harvard*.
- ROBERT W. EISENMENGER, B.A. Amherst 1949; M.F. Yale 1951; M.P.A. Harvard 1959. The cyclical impact of federal monetary, grant-in-aid, and planning programs on state and local government capital expenditures. *Harvard*.
- OLIVER F. GUINN, B.B.A. Oklahoma 1952; M.B.A. 1953. State debt creation in the United States since 1929. *Texas*.
- ROBERT L. HARLOW, B.A. Bates 1957; MA. Yale 1958. Factors affecting state expenditures in the United States. *Yale*.
- RICHARD HEAPS, B.S. Wisconsin 1956. Inheritance taxation and wealth distribution in Wisconsin. *Wisconsin*.
- CHARLES A. HEDGES, B.A. California 1953. Some problems in the financing of highways in the state of California. *California (Berkeley)*.
- GEORGE W. JENNINGS, B.A. Emory 1938; M.A. Georgia 1948. A history of the Virginia fiscal system 1860-1870. *Virginia*.
- WILFRED J. LEWIS, B.A. Temple 1954; M.A. Indiana 1956. Federal fiscal behavior in three postwar recessions. *Indiana*.
- ERLING O. NÆSETH, B.A. Luther 1947; M.S. Wisconsin 1949. The financing of public education in Iowa. *Wisconsin*.
- KEITH E. PHILLIPS, B.A. Washington 1958. Government revenues and expenditures—exogenous or endogenous? Some empirical and theoretical considerations. *Washington*.
- JOHN J. REID, JR., B.A. Connecticut. State veterans' bonuses after World War II and the Korean War. *Virginia*.
- JACK E. ROBERTSON, B.S. Arkansas 1948; M.S. North Texas State 1949. An empirical investigation of the ad valorem tax burden on owner occupants of residential housing in Wichita, Kansas, 1958. *Tulane*.
- RYUZO SATO, B.Econ. Hitotsubashi 1954; M.B.A. Detroit 1959. Fiscal policy and theory of economic growth. *Johns Hopkins*.
- ALASDAIR M. SINCLAIR, B.A. Dalhousie 1956; B.A. Oxford 1958; B.Phil. 1959. Some economic aspects of federalism. *Harvard*.
- WILLIAM C. STUBBLEBINE, B.S. Delaware 1958. The social imbalance hypothesis. *Virginia*.

- JOHN J. TREACY, B.S. South Carolina 1957; M.A. 1958. The flexibility of federal expenditures over the 1957-1958 recession. *Tulane*.
- JOHN E. WALKER, JR., B.S. Clemson 1958. The costs of public education; an empirical inquiry. *Virginia*.
- WILLIAM V. WILLIAMS, B.A. Cornell College 1954. The effect of taxation on industrial location. *Colorado*.
- MAN HE YOU, B.A. Michigan State 1956; M.A. 1958. Taxation of agricultural land in underdeveloped countries. *Oregon*.

International Economics

Degrees Conferred

- VLADIMIR N. BANDERA, Ph.D. California (Berkeley) 1961. Foreign capital in eastern Europe between the World Wars.
- MARTIN R. BARRETT, Ph.D. Harvard 1961. A multiple exchange rate system: an appraisal of Chile's experience, 1946-1955.
- LILLIAN BRIDGER, Ph.D. New York 1961. The Histadrut and Israel's industrial development in the first post-independence decade.
- MAX E. FIESER, Ph.D. Oregon 1961. The role of foreign economic policy in maintaining U.S. war potential.
- M. JUNE FLANDERS, Ph.D. California (Berkeley) 1960. British export shares, 1949-1954: a case study of devaluation.
- HOURLMOUZIS G. GEORGIADIS, Ph.D. Cornell 1961. Balance of payments equilibrium.
- A. GEORGE GOLS, Ph.D. Oregon 1961. United States foreign petroleum investments and public economic policy.
- ROSEMARY C. GRIFFITH, Ph.D. Radcliffe 1961. Factors affecting the continental U.S. manufacturing investment in Puerto Rico.
- A. GERLOF HOMAN, Ph.D. Oregon 1961. The effects of U.S. direct private foreign investments on the U.S. balance of payments.
- ITSUO KAWAMURA, Ph.D. Johns Hopkins 1961. Foreign trade and economic development.
- DONALD B. KESING, Ph.D. Harvard 1961. Labor skills and the factor content of international trade.
- FRANCIS A. LEES, Ph.D. New York 1961. A critical analysis of the European Payments Union: 1954-1958.
- ROBERT E. LIPSEY, Ph.D. Columbia 1961. Price and quantity trends in U.S. international trade.
- LAWRENCE F. MANSFIELD, Ph.D. North Carolina 1961. The origins of the International Monetary Fund.
- BAGICHA SINGH MINHAS, Ph.D. Stanford 1961. An international comparison of factor costs and factor use.
- KENNETH J. ROTHWELL, Ph.D. Harvard 1961. The nature and development of international portfolio investment.
- JORGE RUIZ-LARA, Ph.D. Illinois 1961. The World Coffee Agreement.
- WALTER SHEERER, Ph.D. New York 1961. The Coal and Steel Community stepping stone to European integration.
- ORVEL L. TRAINER, Ph.D. Colorado 1960. The Scandinavian approach to the European Common Market.
- HENRY Y. WAN, JR., Ph.D. Mass. Inst. Technology 1961. A contribution to the theory of trade warfare.
- DONALD A. WELLS, Ph.D. Oregon 1961. Servicing U.S. direct foreign investment.
- JEFFREY G. WILLIAMSON, Ph.D. Stanford 1961. Kuznets cycles and their effect upon American balance of payments, 1820-1913.

Theses in Preparation

- SHAFIQ AHMAD ALVI, B.A. Urda College (Pakistan) 1956; M.A. Karachi 1957. The changes in exchange rate and their repercussions on external trade relations of Pakistan. *Colorado*.
- ELAINE B. ANDREWS, B.A. Stanford 1952; M.A. Fletcher School 1958; M.A.L.D. 1959. Interpretation of recent foreign access to the United States capital market. *Fletcher School*.
- VIROTE ANGKATAVANICH, M.B.A. New York 1957. Exchange control after World War II. *New School*.
- GARNETT F. BEAZLEY, B.S. Marshall 1954; M.B.A. Pennsylvania 1955. Direct private foreign investment and taxation. *Pittsburgh*.
- GEORGE BECKFORD, B.Sc. McGill 1958; M.A. Stanford 1960. Growth trends in tropical primary exports 1900-1960. *Stanford*.
- GERALD O. BIERWAG, B.A. Idaho 1958. Interregional trade and factor proportions. *North-western*.
- SUCHATI CHUTHASMIT, B.L. Thammasat 1951; M.Econ. 1954; M.A. Syracuse 1958; M.A. Fletcher School 1959; M.A.L.D. 1960. The experiences of the United States and its allies in controlling trade with the Red bloc. *Fletcher School*.
- JAAK F. R. DEMAEYER, Lic. Louvain 1953; M.A. Yale 1955. Financial accounts and monetary analysis in the European Economic Community. *Yale*.
- ROBERT F. DERNBERGER, B.A. Michigan 1955; M.A. 1958. Foreign economic relations of Communist China: 1950-1960. *Harvard*.
- MARC C. ETIENNE, Publ. Accountant Haiti 1950; B.A. New York 1953. The demand and supply of funds in an underdeveloped area completely open on a relatively developed, large, free enterprise oligopolistic industrial economy: the Puerto Rican case. *Harvard*.
- MARY FISH, B.A. Minnesota 1951; M.B.A. Texas Technological 1957. Public Law 480: agricultural surpluses and foreign economic assistance. *Oklahoma*.
- CLIVE S. GRAY, B.A. Chicago 1953; M.A. 1956. Soft loans. *Harvard*.
- HENRY P. GRAY, B.A. Cambridge 1950; M.A. 1952. The pattern of invisible trade in the 1950's. *California (Berkeley)*.
- RALPH A. GROSSWILER, B.B.A. Texas, M.A. Missouri 1957. An analysis of the factors affecting the adequacy of international reserves. *Colorado*.
- GERALD K. HELLEINER, B.A. Toronto 1958; M.A. Yale 1960. Some aspects of ties between Canadian and U.S. capital markets, 1952-60. *Yale*.
- ROBERT I. HISLOP, L.L.B. Long Island 1938; L.L.M. Brooklyn 1939. The United States and the Union of Soviet Socialist Republics in the International Labor Organization. *Colorado*.
- WILLIAM A. JOHNSON, B.A. Syracuse 1958. International trade in Indian iron and steel. *Harvard*.
- HELEN JUNZ, M.A. New School 1957. Transportation in the U.S. balance of payments. *New School*.
- JOE WON LEE, B.A. Pusan National University 1952; M.B.A. 1956; M.A. Ball State Teachers 1957. The planning for economic development in underdeveloped countries: a case study of the Nathan Economic Mission in South Korea. *Indiana*.
- PETER J. LLOYD, B.A. Victoria (Wellington) 1958; M.A. 1959. Balance of payments problems of small nations. *Duke*.
- MAUNG MYA MAUNG, B.A. Rangoon 1953; M.A. Michigan 1957. The external trade equilibrium for a welfare state (Burma). *Catholic*.
- FLOYD B. MCFARLAND, B.A. Texas 1957; M.A. 1959. Some current international trade problems of Mexico. *Texas*.
- MARION M. NOBEL, B.A. Michigan 1942; M.A. Iowa n.d. The gold exchange standard, 1919-31 and 1949-61. *Michigan*.

- EUGENE A. PHILIPPS, B.S. Illinois 1958; M.S. 1960. Long-run implications of foreign investment for the U.S. balance of payments. *Illinois*.
- ALBERTO RODRIGUEZ, B.A. Col. Nat. S. Bartolomé (Colombia) 1948; M.A. Catholic 1959. A common market for Latin America. *Catholic*.
- ROBERT H. SHAFFER, B.A. Texas 1949; M.A. 1956. A study of the balance of payments and economic growth of New Zealand. *Duke*.
- KENNETH SMITH, B.A. Southern Methodist 1951; M.A. 1957. The criteria used in the decisions in cases arising under the escape clause of the Reciprocal Trade Agreements Act. *Oklahoma*.
- RAYMOND STAEPELAERE, B.A. Oregon 1959. Capital movements in customs union. *Oregon*.
- CARL H. STEM, B.A. Vanderbilt 1957; M.A. Harvard 1960. A decade of bilateralism in world trade 1950-1960. *Harvard*.
- IZUMI TANIGUCHI, B.B.A. Houston 1952; M.B.A. 1954. Financing of Japanese imports, with especial relation to the role of foreign investments in the process. *Texas*.
- RICHARD A. WARD, B.A. Arkansas 1951; M.A. Maryland 1959. Interest rates and international gold flows and capital movements. *Maryland*.

Business Finance; Investment and Security Markets; Insurance

Degrees Conferred

- WINSTON C. BEARD, Ph.D. Illinois 1961. Financial and economic effects of geographical restrictions upon the investment policies of life insurance companies.
- JOSEPH M. BELTH, Ph.D. Pennsylvania 1961. Participating ordinary life insurance sold by stock companies.
- BILL BISHOP, Ph.D. Texas 1961. A critical evaluation of return on investment concepts used in selecting alternative capital additions.
- RONALD L. CHERRY, Ph.D. Princeton 1961. The typical age of replacement theory: a case study.
- DONALD E. FARRAR, Ph.D. Harvard 1961. The investment decision under uncertainty: portfolio selection.
- D. KENT HALSTEAD, Ph.D. Minnesota 1960. The derivation and evaluation of an individual-stock formula investment plan.
- ROBERT P. HUNGATE, Ph.D. California (Los Angeles) 1961. Inter-business financing: the economic implications for small business.
- ROBERT L. JOHNSON, Ph.D. Iowa 1961. An analysis of the financial problems and practices of 153 closely held companies which offered securities to the public in 1957.
- AHMED KOOROS, Ph.D. Southern California 1961. The theory of investment programming: a suggested econometric model.
- EDMUND A. MENNIS, Ph.D. New York 1961. Measuring corporate profits.
- JOHN H. NIEDERCORN, Ph.D. Harvard 1961. An econometric study of aggregate investment in plant and equipment in the U.S. 1930-1957.
- SCOTT NIELSON, Ph.D. Mass. Inst. Technology 1961. Market value and financial structure in the railroad industry.
- GARNET D. OLIVE, Ph.D. Iowa 1960. An analysis of the dividend policies of selected American corporations.
- RALPH G. RINGGENBERG, JR., Ph.D. Northwestern 1960. An analysis and evaluation of the substitution of income debentures for preferred stock in the capital structures of Class I railway companies.
- WILLIAM F. SHEARPE, Ph.D. California (Los Angeles) 1961. Portfolio analysis based on a simplified model of the relationships among securities.
- M. RICHARD SUSSMAN, Ph.D. Michigan 1960. The stock dividend: a study of its concepts and of its uses in financial management.

DONALD E. VAUGHN, Ph.D. Texas 1961. Development of the small business investment company program.

KENNETH J. WELLER, Ph.D. Michigan 1961. Use of stock rights as a technique of raising equity capital.

JOSEPH A. WISEMAN, Ph.D. New York 1961. Financial aspects of depreciation in industrial corporations.

Theses in Preparation

ELLIOTT L. ATAMIAN, B.A. Michigan 1942; M.B.A. Harvard 1948. A study of terms most subject to bargaining in the direct placement of corporate securities. *Harvard*.

W. SCOTT BAUMAN, B.B.A. Michigan 1953; M.B.A. Michigan 1954. The investment experience of various investment companies with common stocks of varying degrees of popularity during the period 1950-1959. *Indiana*.

MARIAN CZARNECKI, B.S.F.S. Georgetown 1952. Small business financing. *Georgetown*.

PHILIP DAVIDOWITZ, B.A. Brooklyn 1951; M.A. Columbia 1953; M.B.A. Harvard 1955. High-income individuals' investment behavior—the ideal and actual. *Harvard*.

HERBERT DENENBERG, LL.B. Creighton 1954; B.S. Johns Hopkins 1958; LL.M. Harvard 1959. An analysis of what constitutes insurance within the meaning of the law. *Pennsylvania*.

JOSEPH B. FETZER, B.S. Utah 1947; M.B.A. Pennsylvania 1948. An analysis of long-term financing policies of U.S. oil companies. *Stanford*.

GEORGE W. GLENDENNING, B.S. Temple 1958. Other insurance provisions in insurance contracts. *Pennsylvania*.

GEORGE GRANGER, B.A. Michigan State 1956; M.B.A. 1959. Financed life insurance with a critical evaluation of plans for financing life insurance premiums. *Pennsylvania*.

OTHA L. GRAY, B.A. Furnam 1950; M.S. Virginia Polytechnic Inst. 1951; LL.B. Emory 1958. Small business financing through public offering of securities; a critical analysis of selected financial promotions under government statutes with emphasis upon shareholder protection. *Alabama*.

RONALD C. HORN, B.S. Butler 1958. Subrogation as it applies to insurance theory and practice. *Pennsylvania*.

JAMES F. JACKSON, JR., B.B.A. Texas 1955; M.B.A. 1959. Evaluation of leasing and the financial criteria used in the leasing decision. *Texas*.

HARRY M. JOHNSON, B.S. Mass. Inst. Technology 1957; M.B.A. Pennsylvania 1960. Major medical expense insurance. *Pennsylvania*.

BERNARD J. KILBRIDE, B.A. Saint Francis Xavier 1950; M.S. Columbia 1955. Listing requirements of the leading stock exchanges in Canada. *Texas*.

PAUL O. KOETHER, B.A. Lafayette 1958; M.A. Princeton 1960. Corporation finance in the business cycle in the steel industry. *Princeton*.

BOBBIE D. OWENS, B.S. Northwest Missouri State 1959. The overseas operations of American life insurance companies. *Pennsylvania*.

JOHN J. PASCUCCI, B.S. Rutgers 1950; M.B.A. 1955; M.B.A. Stanford 1956. The investment policies of collectively bargained pension funds. *Stanford*.

ROBERT J. PORTER, B.A. Georgetown 1952; M.B.A. North Carolina 1957. Sources of funds for industrial development in the South. *North Carolina*.

DIOMEDES D. PSILOS, B.A. School Political Science, Athens, 1954. The capital market in Greece: a special study of the role of finance in economic growth. *California (Berkeley)*.

GEORGE REJDA, B.S. Creighton 1957; M.A. 1958. Dollar averaging and formula plans: their role in the investment operations of insurance companies. *Pennsylvania*.

NEIL D. REZNICK, B.S. New York 1956; M.A. Pennsylvania 1958. Property and liability insurance premium paying plans. *Pennsylvania*.

- PETER ROSKO, B.S.E. Michigan 1951; M.B.A. 1955. Investment aspects of land contracts. *Michigan*.
- LEO P. ROTHERAUFF, B.A. St. Vincent's College 1953; M.B.A. *Indiana* 1958. The management of endowment funds in twenty colleges and universities. *Indiana*.
- MARTIN B. SOLOMON, JR., B.S. Kentucky 1955; M.B.A. 1960. Investment theory and practice in small business. *Kentucky*.
- ROBERT D. TUCKER, B.A. Colorado 1931; M.B.A. California, Los Angeles 1948. An evaluation of the Oklahoma Corporation Act. *California (Los Angeles)*.
- ALEJANDRO VEGH, B.S. Uruguay 1953. Optimal investment decisions in the steel industry. *Harvard*.
- FRASER G. WALLACE, B.Com. British Columbia 1958; M.B.A. California, Los Angeles 1959. Optimal financial policy in a firm simulation study. *California (Los Angeles)*.

**Business Organization; Managerial Economics; Industrial
Management Marketing; Accounting**

Degrees Conferred

- JAROLD G. ABBOTT, Ph.D. Mass. Inst. Technology 1960. Changing role and responsibilities of management: an environment analysis.
- ROBERT W. BAEDER, Ph.D. Ohio State 1961. A critical analysis of methods of determination and utilization of territorial market potentials.
- JAMES B. BOWER, Ph.D. Texas 1960. Principles of accounting system design.
- LOUIS P. BUCKLIN, Ph.D. Northwestern 1960. The economic structure of channels of distribution.
- GEOFFREY P. CLARKSON, Ph.D. Carnegie Inst. Technology 1961. The Meno Anew: a simulation of trust investment.
- WILLIAM H. CULP, Ph.D. Michigan 1961. Accounting for business separations.
- RALPH L. DAY, Ph.D. North Carolina 1961. A study of mathematical programming as a tool for marketing management.
- DON T. DECOSTER, Ph.D. Texas 1961. A critical analysis and appraisal of supplementary cost controls for inventories.
- MYLES M. DRYDEN, Ph.D. Cornell 1961. Economic replacement and the criterion problem: with special reference to the major urgency rating.
- DANIEL FEINBERG, Ph.D. New York 1961. A case of substitution: butter and margarine.
- CHARLES GOELDNER, Ph.D. Iowa 1961. The implications of automation in food marketing (selected case studies).
- MARSHALL I. GOLDMAN, Ph.D. Harvard 1961. The economics of trade and distribution in the Soviet Union: marketing in a controlled economy.
- JAC L. GOLDSTUCKER, Ph.D. Minnesota 1961. Dynamics of wholesale trading areas.
- ROBERT L. HAMMAN, Ph.D. Harvard 1961. Theory of investment of the diversified corporation.
- EDMOND S. HARRIS, Ph.D. Columbia 1960. Classified pricing of milk; some theoretical aspects.
- ABUL HASNAT, Ph.D. Pennsylvania 1961. Corporate financial reporting in Pakistan.
- HERBERT G. HICKS, Ph.D. Alabama 1960. The quantification of managerial decision problems.
- STEPHEN J. HIEMSTRA, Ph.D. California (Berkeley) 1960. Structural changes in California food retailing.
- WILLIAM H. HOFFMAN, JR., Ph.D. Texas 1960. Federal income taxation and the corporate executive.
- WILLIAM F. MASSY, Ph.D. Mass. Inst. Technology 1960. Innovations and market penetration.

- MARTIN MELLMAN, Ph.D. New York 1961. Marketing cost analysis for manufacturers—a review of current literature and a field study of twenty-eight companies.
- WILLIAM C. MOTES, Ph.D. Iowa (Ames) 1960. Effects of changes in transportation costs on the location of the meat packing industry.
- WILLIAM M. PARKER, Ph.D. Southern California 1961. The usefulness and limitations of accounting reports for testing the theory of the firm: an appraisal.
- BORIS PARL, Ph.D. Northwestern 1960. An analysis of the shoe manufacturing industry with special emphasis on changes and trends in the use of various distribution channels by shoe manufacturers.
- DONALD B. SHUFORD, Ph.D. Illinois 1961. A study of the firm's advertising expenditure.
- JEROME C. STRONG, Ph.D. Columbia 1961. Diversification in medium-large manufacturing companies.
- ROBERT B. SWEENEY, Ph.D. Texas 1960. An inquiry into the use of mathematical models to facilitate the analysis and interpretation of cost data.
- ALBERT SWEETSER, Ph.D. American 1961. The public utility status of commercial warehousing in the U.S.: an investigation into its history, scope and justification.
- RALPH L. THOMAS, Ph.D. Pittsburgh 1961. Policies underlying corporate giving.
- WILLIAM W. THOMPSON, JR., Ph.D. Alabama 1960. A managerial history of a cotton textile firm, Spartan Mills, 1888-1958.
- MAYNARD N. TOUSSAINT, Ph.D. Mass. Inst. Technology 1960. Impact of the industrial relations functions on line management.
- NICK S. VIDALAKIS, Ph.D. Stanford 1961. Innovating marketing strategies in selected service industries.
- KARL E. VOGT, Ph.D. Syracuse 1961. The influence of the economic environment on the erosion of managerial prerogatives: two case studies.
- HARVEY M. WAGNER, Ph.D. Mass. Inst. Technology 1960. Statistical management of inventory.

Theses in Preparation

- ROBERT D. AMASON, B.B.A. Texas A & M 1951; M.S. 1958. A study of the operating results from pricing policies and practices which may be due to certain managerial characteristics found among selected building material dealers of Texas. *Arkansas*.
- DONALD ANDERSON, B.S.C. Iowa 1956; M.A. 1957. A description and analysis of changes in the basic selling methods of selected wholesale firms. *Iowa*.
- GORDON C. ARMOUR, B.S. California (Los Angeles) 1953; M.B.A. 1957. Determining relative location of physical facilities by computerized simulation. *California (Los Angeles)*.
- HELMY H. BALIGH, B.A. Oxford 1954; M.B.A. California 1958. Analysis of factors determining assortment carried at the wholesale level in marketing with emphasis on product characteristics. *California (Berkeley)*.
- RICHARD F. BARTON, B.S. Northwestern 1948. Business decision theory. *California (Berkeley)*.
- EVERETT R. BOLLINGER, JR., B.S. Georgia Inst. Technology 1948; M.S. 1950. Management decision-making from accounting records for liquified petroleum marketers. *Indiana*.
- STANLEY I. BUCHIN, B.S. Mass. Inst. Technology 1952; M.B.A. Harvard 1956. The development of a business simulation model. *Harvard*.
- EUGENE R. DONAT, B.A. Iowa State Teachers 1951; M.A. Iowa 1954. Information technology and the managerial hierarchy. *Iowa*.
- JOHN D. EDWARDS, B.S. Louisiana Polytechnic Inst. 1949; M.B.A. Louisiana 1957. Continuing educational and professional development for the industrial accountant. *Alabama*.
- SOUHEIL E. ELIA, B.A. American (Beirut) 1955; M.B.A. American 1957. The effects of centralized procurement on cost of service in hospitals. *American*.

- THOMAS E. ENNIS, JR., B.S. North Carolina 1952; M.B.A. 1955. Managerial services rendered by accounting firms. *Michigan*.
- JOHN U. FARLEY, B.A. Dartmouth 1957; M.B.A. Amos Tuck 1959. Analysis of factors affecting loyalty-proneness of members of a consumer panel to brands of selected products. *Chicago*.
- JAMES M. FERGUSON, B.A. Stanford 1958. The advertising rate structure in the daily newspaper industry. *Chicago*.
- WESLEY O. FORTNER, JR., B.S. Tennessee 1957; M.B.A. Alabama 1959. A predetermined cost system for a small milk processing firm. *Alabama*.
- JAMES M. FREMGEN, B.S.C. Notre Dame 1954; M.B.A. Indiana 1955. Involuntary liquidation of inventories priced by LIFO. *Indiana*.
- JOSEPH GARTNER, B.S. Connecticut 1954; M.S. New Hampshire 1955. An application of economic models to consumer marketing programs. *Iowa (Ames)*.
- EDWARD GEORGE, M.A. Cairo 1953. The chemical engineer in the American industry. *New School*.
- JAMES L. GIBSON, B.A. Centre 1957; M.B.A. Kentucky 1959. Accounting and economics in decision-making: case studies of small business firms. *Kentucky*.
- PAUL E. GREEN, B.A. Pennsylvania 1950; M.A. 1953. Formal decision techniques in business planning—an intra-firm investigation. *Pennsylvania*.
- J. H. GRIGGS, B.Com. Toronto 1943; M.A. 1960. The economic implications of accounting theory. *Toronto*.
- RAYMOND M. HAAS, B.S. Rider 1956; M.B.A. Lehigh 1958. A model of the long range new product planning function in business. *Indiana*.
- ROBERT C. HARING, B.A. Indiana 1954; M.B.A. 1958. Marketing of mechanical household refrigerators, 1946-1960. *Indiana*.
- RICHARD I. HARTMAN, B.S. Bradley 1954; M.B.A. Indiana 1956. An analysis of managerial manpower planning in selected manufacturing firms. *Indiana*.
- LOYD C. HEATH, B.A. Tufts 1951; M.B.A. Northwestern 1953. The use of financial statements to determine whether proposed offerings under the California Corporate Securities Law are "fair, just, and equitable." *California (Berkeley)*.
- LEONARD W. HEIN, B.S.C. Loyola 1952; M.B.A. Chicago 1954. A critical analysis of the impact of the British Companies Act on the practice of accounting. *California (Los Angeles)*.
- CLIFFORD E. HUTTON, B.S. Oklahoma State 1952; M.S. 1953; C.P.A. Oklahoma 1954. An analysis and evaluation of the controllership function and training for controllership work. *Texas*.
- JOHN H. JAMES, B.M.E. Clemson 1951; M.B.A. Indiana 1959. Planning: a study of the relationship between short- and long-range planning in selected businesses. *Indiana*.
- EDWARD E. JOCHUMSEN, B.S.C. Iowa 1951; M.A. 1959. An analysis of distributive functions of the communities in Washington County, Iowa. *Iowa*.
- ANTHONY R. KRACHENBERG, B.S. Washington (St. Louis) 1950; M.S. Columbia 1957. Commercial bank marketing: with special reference to businessmen's needs. *Michigan*.
- ROSS W. LOVELL, B.B.A. Texas A & M 1954; M.B.A. Houston 1958. An evaluation of some applications of electronic data processing to production control. *Texas*.
- ALY MOHAMED M. MAASARANI, B.Com. Alexandria 1951; Dipl. 1954; M.B.A. Texas 1959; M.A. 1961. The role of the management consultant in underdeveloped countries. *Texas*.
- DONALD J. MALONE, M.E. Stevens Inst. Technology 1953; M.S. 1957. Marginal analysis of the value of business information. *Pennsylvania*.
- ROM J. MARKIN, B.S. Marshall 1955; M.B.A. Indiana 1957. An analysis of the super-market and superette in the post World War II period. A study of the contributing forces of development, growth and change. *Indiana*.
- RAY H. MCCLARY, B.S. Missouri 1955; M.A. 1956. The role of cost definitions and measurements in mathematical models for maintenance activities. *Indiana*.

- R. WILLIAM MILLMAN, B.B.A. Toledo 1957; M.B.A. Florida 1959. The development of management thought. *Florida*.
- ROBERT G. MURDICK, B.A. Duke 1941; M.S. Rensselaer Polytechnic 1960. Project planning—the strategy of the firm. *Florida*.
- KRISTIAN S. PALDA, B.A. Queen's 1956; M.B.A. Chicago 1958. The measurement of cumulative advertising effects. *Chicago*.
- HAROLD R. PHILLIPS, B.A. Southern Missionary 1958; M.B.A. Florida 1960. The use of quantitative techniques in decision-making in hospital management. *Florida*.
- GEORGE I. PRATER, B.A. Washington State 1955. Management accounting concepts for planning and controlling inventories. *Stanford*.
- MASON P. ROSENTHAL, B.S. Tufts 1955; M.B.A. Chicago 1958. Determinants of gasoline sales at retail outlets. *Chicago*.
- WALTER A. ROTKIS, B.A. Illinois 1939; M.Litt. Pittsburgh 1950. A critical evaluation of similarities and differences between business budgeting and U.S.A.F. Weapon System budgeting concepts and procedures. *American*.
- C. W. RUDELIUS, B.S. Wisconsin 1953; M.B.A. Pennsylvania 1959. A statistical forecasting model of a research and development firm selling defense systems to the government. *Pennsylvania*.
- ORHAN I. SADIK KHAN, B.A. American (Cairo) 1951; M.B.A. Stanford 1953. Comparative analysis of the income statements of German industrial corporations. *Stanford*.
- HADLEY P. SCHAEFER, B.B.A. Michigan 1955; M.B.A. 1956. Post-completion analysis of capital expenditure decisions. *Michigan*.
- PAUL SEIDENSTAT, B.A. Delaware 1955. Marketing development in the American petroleum industry, 1914-1941. *Northwestern*.
- STANLEY J. SHAPIRO, B.A. Harvard 1955. Decision making, survival and the organized behavior system—a case study of the Ontario Hog Producers Organization. *Pennsylvania*.
- CURTIS H. STANLEY, B.B.A. Michigan 1956; M.B.A. 1957. The role of objectivity in accounting measurements. *Michigan*.
- SEYMOUR SUDMAN, B.S. Roosevelt 1949. On the accuracy of recording of consumer panels. *Chicago*.
- DONALD L. THOMPSON, B.S. Pennsylvania 1951; M.S. San Francisco State 1958. San Francisco Bay Area retail trade structure. *California (Berkeley)*.
- WILLIAM J. WASMUTH, B.S.A.E. Jefferson 1944; M.B.A. Washington (St. Louis) 1955. A study of the administrative feasibility of flexible retirement programs. *Indiana*.
- GEORGE WEBSTER, B.S. Maryland 1943; LL.B. Georgetown 1955; LL.M. 1948; M.B.A. Harvard 1951. The independent wholesaler as an instrument of innovation in the American economy. *American*.
- RICHARD D. YOUNG, B.A. Minnesota 1951; M.A. 1954. Combined heuristic and analytic approaches to some production sequencing problems. *Carnegie Inst. Technology*.

Industrial Organization; Government and Business; Industry Studies

Degrees Conferred

- RICHARD S. ABLIN, Ph.D. Chicago 1960. Misallocation of electric power in the Pacific Northwest.
- ARTHUR T. ANDERSEN, Ph.D. Harvard 1961. The resource and competitive significance of scrap reclamation.
- YORAM BARZEL, Ph.D. Chicago 1961. Productivity in the electric power industry, 1929-1955.
- ALFRED G. DALE, Ph.D. Texas 1961. Nuclear power development in the United States to 1960: a new pattern in innovation and technological change.

- CHARLES E. EDWARDS, Ph.D. North Carolina 1961. The struggle for survival: a study of the experience of the leading independent manufacturers in the United States passenger car industry, 1946-1958.
- JOHN R. FELTON, Ph.D. California (Los Angeles) 1961. The horizontal dissolution of manufacturing enterprises.
- HELMUT J. FRANK, Ph.D. Columbia 1961. The pricing of Middle East crude oil.
- NICHOLAS A. GLASKOWSKY, JR., Ph.D. Stanford 1960. An analysis and evaluation of the development of coordinated air-truck transportation with special reference to Northwest Airlines, Inc.
- HENRY GROSSMAN, Ph.D. Georgetown 1961. The problem of reasonable market price in the regulation of independent producers of natural gas.
- DAVID V. HUDSON, Ph.D. Mass. Inst. Technology 1961. Economics of the natural gas pipeline industry: a case study.
- PATRICK HUNTLEY, Ph.D. North Carolina 1961. State distribution of manufacturers' plant and equipment in place, 1954-1956.
- BOB R. KITTLESON, Ph.D. Northwestern 1961. Competition in the fractional horsepower electric motor industry.
- HENRY P. KNOWLES, JR., Ph.D. Stanford 1961. Railroad-motor carrier integrations and public policy.
- FREDERICK E. KOTTKE, Ph.D. Southern California 1961. An economic analysis of financing an interstate highway system.
- EUGENE KOZIK, Ph.D. Pittsburgh 1960. Economic analysis of representative recent federal anti-monopoly decisions within the concept of workable or effective competition.
- SUJIN LING, Ph.D. Columbia 1961. Economies of scale in the electric power generating industry.
- MILLARD F. LONG, Ph.D. Chicago 1961. The price of coal: a study of the policies of the National Coal Board.
- RENE MANES, Ph.D. Purdue 1961. The effects of the United States oil import policy on the petroleum industry.
- MELVIN E. McMICHEAL, Ph.D. Texas 1961. The impact of integrated data processing on organization structure.
- RONALD E. MILLER, Ph.D. Princeton 1961. The efficiency of the domestic air route structure.
- THOMAS G. MOORE, Ph.D. Chicago 1961. Legal barriers to entry.
- JAMES M. PATTERSON, Ph.D. Cornell 1961. The federal promotion of ocean shipping.
- BENJAMIN PERLES, Ph.D. Boston 1961. Recent innovations in the woolen and worsted industry of the United States.
- GEORGE D. QUIRIN, Ph.D. Princeton 1961. The regulation of field prices for natural gas under the Natural Gas Act.
- JACQUES J. SINGER, Ph.D. Mass. Inst. Technology 1961. Postwar development and future of the North American newsprint industry.
- VIDYAPATI SINGH, Ph.D. Western Reserve 1961. Financing of rural road improvements.
- RICHARD SLAVIN, Ph.D. Pittsburgh 1961. The development of current economic problems in the pressed and blown glass industry.
- ALEXANDER L. SRBICH, Ph.D. Minnesota 1961. Lumber manufacturing on two continents: with special reference to the organization and control of lumber manufacturing firms, scientific production management, and industrial engineering techniques.
- WALTER J. STENASON, Ph.D. Harvard 1961. Competition in transportation: an analytical and empirical examination of market structure and price policy in transportation.
- MARCIA L. STIGUM, Ph.D. Mass. Inst. Technology 1961. The impact of the EEC on the French cotton and electrical engineering industries.
- LARKIN WARNER, Ph.D. Indiana 1961. The economics of the transportation of Ohio coal.

SHIS YEN WU, Ph.D. Northwestern 1961. Determination of price, output, and sales equilibrium in domestic copper industries.

Theses in Preparation

RICHARD B. BALTZ, B.B.A. Baylor 1955; M.S. 1957. The cost-output analysis of independent telephone companies in Arkansas. *Arkansas*.

THOMAS B. BIRKENHEAD, M.A. Brooklyn 1955. Economics of the Broadway theater. *New School*.

ROBERT L. BLOMSTROM, B.S. Colorado 1947; M.S. 1950. The Rocky Mountain fur trade. *Colorado*.

JOHN F. BOWEN, B.A. Yale 1957. Government procurement and industrial concentration: the effect of procurement activities of the federal government upon concentration within selected manufacturing industries and the impact of this effect upon competition. *Vanderbilt*.

DUNCAN CAMPBELL, B.A. Toronto 1958. The economics of the Canadian oil industry. *Cornell*.

PHILIP R. CATEORA, B.B.A. Texas 1957; M.B.A. 1959. Power in action: a study of community power, decision-making, and economic development in Commerce City. *Texas*.

JOHN J. COYLE, JR., B.S. Pennsylvania State 1957; M.S. 1959. An analysis of the rule of rate-making. *Indiana*.

MARCEL G. DAGENAIS, B.A. Jean de Brébeuf College 1952; M.A. Montreal 1958; M.A. Yale 1960. The supply of newsprint paper in North America. *Yale*.

DON DOTY, B.S. Bradley 1951; M.A. 1954. The justification for including recreational benefits in federal water project benefit-cost analysis: an empirical test. *Arkansas*.

GUILLERMOS S. EDELBERG, B.S. Buenos Aires 1953; M.B.A. California (Berkeley) 1958. Procurement practices of the Mexican affiliates of selected United States automobile companies. *Harvard*.

J. ELISEO DA ROSA, B.A. Asunción 1948; M.A. Chicago 1957. Economic criteria for establishing highway project priority. *Kentucky*.

ROBERT L. DECKER, B.S. Colorado 1957. The economics of the legalized gambling industry in Nevada. *Colorado*.

ROBERT W. GERWIG, B.S. Iowa (Ames) 1952; M.B.A. Chicago 1958. Natural gas production—a study of the cost of regulation. *Chicago*.

NORMAN J. GHARRITY, B.A. Northwestern 1958. The use and non-use of patented inventions. *Johns Hopkins*.

DONALD GRUNEWALD, B.A. Union 1954; M.A. Harvard 1955; M.B.A. 1959. The entrepreneur and the F.C.C.—a case study of Channel Five, Boston. *Harvard*.

JOHN HAUSE, B.A. Carleton 1957; M.A. Chicago 1958. New entry in manufacturing industries. *Chicago*.

JOHN F. HENRY, B.S. Auburn 1954; M.S. Georgia Inst. Technology 1957. A study of rating factors with special emphasis on a constant range ratio. *Alabama*.

HELMER C. HOLJE, B.S. Montana State 1949; M.S. 1950. An analysis of cost allocation and cost sharing in multiple purpose water resources development. *Wisconsin*.

PAUL IVORY, B.A. Cornell 1953. Transportation industry in contemporary China. *California (Berkeley)*.

HAROLD D. JAMES, B.B.A. Miami 1950; M.B.A. 1952. Labor-management considerations in the abandonment of large-scale manufacturing industries. *Alabama*.

CHARLES A. KELLY, B.S. Duquesne 1953; M.S. 1955. The economics of competition for the transportation of small shipments in the United States. *Pittsburgh*.

JOHN F. KILLEEN, M.A. Gonzaga 1952. The National Coal Policy Conference: a case study of an industry's approach toward a functional economy through the recognition of mutual dependence. *Georgetown*.

- DONALD C. KING, B.S. Auburn 1948; M.B.A. Harvard 1950. A critical analysis of marketing practices in the ethical drug industry. *North Carolina*.
- ROBERT L. KNOX, B.S. Oklahoma State 1954; M.A. 1958. Workable competition in the rubber tire industry. *North Carolina*.
- H. MICHAEL MANN, B.A. Haverford 1956. Consumer welfare and imperfect competition—a study of General Motors Acceptance Corporation. *Cornell*.
- KARL B. MARX, B.A. Michigan State 1956; M.A. 1957. Monopolies versus state taxation of liquor. *Illinois*.
- DAVID MCFARLAND, B.A. Millsaps 1953. The market concept in antitrust law. *Vanderbilt*.
- EARL E. MUNTZ, JR., B.A. Yale 1958. An industrial economic model. *Duke*.
- WILLIAM J. MURPHY, B.S. Merrimack 1951; M.A. Boston College 1954. The postwar developments in the United States jewelry industry. *Boston College*.
- JOHN W. O'BRIEN, B.A. McGill 1953; M.A. 1955. Public and privately owned telephone systems—an economic comparison. *McGill*.
- MORTON K. OHLSON, B.A. Colorado 1954; M.A. New Mexico 1958. Economics of a self-policing industry. *Colorado*.
- ALDO L. OSTI, Dr. Agr. Sc. Naples 1954. Interregional competition in the tomato canning industry of the United States. *Cornell*.
- SAMUEL R. REID, B.S.C. Saint Louis 1950; M.S.C. 1959. Corporate acquisitions and mergers in Missouri, 1948 to 1959. *Saint Louis*.
- LAURENCE C. ROSENBERG, B.A. Brooklyn 1955; M.B.A. Cornell 1959. The role of pipelines in the allocation of our natural gas resources. *Cornell*.
- MILTON RUSSELL, B.A. Texas A & I 1955; M.A. Oklahoma 1956. A study of the economic effects of the decision in the Phillips case. *Oklahoma*.
- CHARLES H. SAVAGE, JR., B.S. Boston College 1942; M.A. Oregon State 1956. A study of a factory in the Andes. *Harvard*.
- LEONARD G. SCHIFRIN, B.A. Texas 1954; M.A. 1958. The ethical drug industry: price policies, profits, and competition. *Michigan*.
- LAWRENCE E. SCHWARTZ, B.A. Northwestern 1956; M.A. Harvard 1960. Economics of communication. *Harvard*.
- WILLIAM SHARPE, B.A. California (Los Angeles) 1955; M.A. 1956. The use of a buyer-seller device for effective allocation of military airlift. *California (Los Angeles)*.
- DONALD R. SHAUL, B.S. U.S. Naval Academy 1933; M.B.A. California (Los Angeles) 1956. Data processing and its relationship to centralization. *California (Los Angeles)*.
- W. GEOFFREY SHEPHERD, B.A. Amherst 1957; M.A. Yale 1958. Profits and investment policies in the British nationalized fuel and power industries. *Yale*.
- IRWIN H. SILBERMAN, B.S. New York 1959. Industrial concentration and union growth. *Mass. Inst. Technology*.
- THOMAS W. SYNNOTT, III, B.A. Williams 1958; M.A. Yale 1959. Some characteristics of the growth cycle of an industry: American cotton textiles, 1815-1955. *Yale*.
- VLADIMIR G. TREML, B.A. Brooklyn 1955; M.A. Columbia 1956. Analysis of economic planning in the Societ electric power industry. *North Carolina*.
- K. PETER WAGNER, M.A. New School 1956. Animal hides and skins in competition with man-made products and other materials. *New School*.
- RICHARD L. WALLACE, B.S. Northwestern 1958. An analysis of TVA power rates. *Vanderbilt*.
- WALTER H. WARRICK, B.S. Purdue 1948; M.S. 1958. The role of the privately owned electric utilities in the development of atomic energy for central station electrical power generation in the United States. *Purdue*.
- SAMUEL M. WILLIS, B.S. Clemson 1950; M.S. Georgia Inst. Technology 1955. An analysis of the managerial controls of a specialized textile plant. *Alabama*.

Land Economics; Agricultural Economics; Economic Geography; Housing
Degrees Conferred

- MARTIN E. ABEL, Ph.D. Minnesota 1961. An economic analysis of programs for expanding the demand for farm food products in the United States.
- MAHESH C. AGARWAL, Ph.D. California (Berkeley) 1960. Rotation selection on the family farm in the district of Muzffarnagar of India.
- DAVID J. ALLEE, Ph.D. Cornell 1961. Governmental facilitation of irrigation in New York.
- GONZALO J. ARROYO CORREA, Ph.D. Iowa (Ames) 1961. Dynamic programming models for identification and measurement of inefficiencies in leasing arrangements.
- RANDOLPH BARKER, Ph.D. Iowa (Ames) 1960. The response of milk production to price: a regional analysis.
- WALLACE BARR, JR., Ph.D. Ohio State 1961. Major economic impacts of the conservation reserve on Ohio agricultural and rural communities.
- H. WALTER BAUMGARTNER, Ph.D. Minnesota 1960. Factors associated with potential mobility among farmers.
- HELMUT H. F. BINHAMMER, Ph.D. McGill 1961. A study of the residential construction sector in the Canadian economy.
- LEO V. BLAKLEY, Ph.D. Chicago 1961. Quantitative relationships in the cotton economy with implications for economic policy.
- MELVIN G. BLASE, Ph.D. Iowa (Ames) 1960. Soil erosion control in western Iowa: problems and progress.
- GEORGE BLYN, Ph.D. Pennsylvania 1961. Agricultural trends in India 1891-1947: output, welfare, and productivity.
- CARROLL G. BRUNTHAVER, JR., Ph.D. Ohio State 1960. A study of the Ohio lamb marketing structure, with particular emphasis on competitive bidding versus negotiated pricing systems.
- DAVID L. CALL, Ph.D. Cornell 1960. Interregional competition in the production and processing of table beets.
- BURNHAM O. CAMPBELL, JR., Ph.D. Stanford 1961. The housing life cycle and long swings in residential construction: a statistical and theoretical analysis.
- SALVATORE COMITINI, Ph.D. Washington 1960. A sectoral study of the economic development of Japanese fisheries exploitation.
- GRANT L. CORNELIUS, Ph.D. Wisconsin 1961. A study of residual income and land values on Wisconsin farms.
- ALBIN J. DAHL, Ph.D. California (Berkeley) 1961. British investment in California mining.
- ROBERT C. DAVENPORT, Ph.D. Maryland 1960. The economics of urban renewal: an evaluation of the federal program.
- JACK R. DAVIDSON, Ph.D. California (Berkeley) 1960. Economic efficiency and firm adjustment for market milk production in the southern metropolitan milkshed of California.
- CARL K. EICHER, Ph.D. Harvard 1961. Constraints on economic progress on the Rosebud Sioux Indian reservation.
- HOMER FAVOR, Ph.D. Pittsburgh 1960. The effects of racial changes in occupancy patterns upon property values in Baltimore.
- LEHMAN B. FLETCHER, Ph.D. California (Berkeley) 1960. Growth and adjustment of the Los Angeles milkshed: a study in the economics of location.
- MARQUIS L. FOWLER, Ph.D. California (Berkeley) 1961. An economic-statistical analysis of the foreign demand for American cotton with special reference to the impact of United States cotton policy.
- CECIL E. FULLER, Ph.D. Ohio State 1961. A minimum cost movement pattern for feed grains in Ohio.

- MAMMOOTIL V. GEORGE, Ph.D. Wisconsin 1961. The causes of dairy mergers and their impact on the structure of the dairy industry.
- JAMES F. GILSENAN, Ph.D. New York 1961. An analysis of the industrial park growth phenomenon.
- REGINALD K. HARLAN, Ph.D. Ohio State. Analysis of costs and problems involved in a program for stimulating movement of land and human resources from agriculture in Gallia County, Ohio.
- YUJIRO HAYAMI, Ph. D. Iowa (Ames) 1960. Poultry supply functions.
- PETER G. HELMBERGER, Ph.D. California (Berkeley) 1961. The economic impact of bargaining cooperatives in the production and distribution of fruits and vegetables.
- EDGAR P. HICKMAN, Ph.D. North Carolina 1961. A method for state economic analysis—with special reference to North Carolina, 1947-1956.
- DALE M. HOOVER, Ph.D. Chicago 1961. A study of land prices in the United States, 1911-1958.
- IRVING E. JOHNSON, Ph.D. Cornell 1961. Alternatives in agricultural land tenure, Jamaica, West Indies.
- BARCLAY G. JONES, Ph.D. North Carolina 1961. The theory of the urban economy: origins and development with emphasis on intraurban distribution of population and economic activity.
- IVAN L. KINNE, Ph.D. Cornell 1960. An analysis of costs and economic efficiency in New York State apple packing houses.
- TONG HUN LEE, Ph.D. Wisconsin 1961. Housing expenditure analysis: a decision unit model.
- JAMES H. LEWIS, Ph.D. Ohio State 1960. An analysis of market structure and spatial price patterns for hogs and pork and pork products in Ohio.
- RICHARD J. MCCONNEN, Ph.D. California (Berkeley) 1960. The economics of range fertilization in California.
- LUIS A. MEJIA-MATTEI, Ph.D. Wisconsin 1961. An integrated and diversified local cooperative—a case study.
- ELMER L. MENZIE, Ph.D. California (Berkeley) 1961. Section 22 of the Agricultural Adjustment Act of 1933: a study in public policy formation and administration.
- RUSSELL E. MOFFETT, Ph.D. California (Berkeley) 1961. Water resource investment, with particular attention to uncertainty.
- BENGT A. NEKBY, Ph.D. Iowa (Ames) 1961. The structural development of American agriculture.
- RALPH E. NELSON, Ph.D. Minnesota 1960. The nature of competition among South Dakota dairy manufacturing plants.
- LEONIDAS POLOPOLUS, Ph.D. California (Berkeley) 1960. U.S. beet sugar: a study of industry structure and performance under protection and control.
- ROBERT H. REED, Ph.D. California (Berkeley) 1961. Economic efficiency in multiple product frozen vegetables plants.
- JOHN R. SCHMIDT, Ph.D. Minnesota 1960. Farm organization as influenced by forage acreage.
- LEE F. SCHRADER, Ph.D. California (Berkeley) 1961. A spatial equilibrium analysis of cattle feeding in the United States.
- G. EDWARD SCHUEH, Ph.D. Chicago 1961. An econometric investigation of the market for hired labor in agriculture.
- ERIC C. SIEVWRIGHT, Ph.D. McGill 1961. The effect of petroleum development on the Alberta economy.
- DONALD D. STEWARD, Ph.D. Ohio State 1960. Income, employment, and resource use among rural families in southeastern Ohio.
- DAN YARON, Ph.D. Iowa (Ames) 1960. Resource allocation for dairy and field crops in the Negev area of Israel.

PINEHAS ZUSMAN, Ph.D. California (Berkeley) 1961. Econometric analysis of California early potato market.

Theses in Preparation

- JED A. ADAMS, B.S. California 1957; M.S. 1961. Intermarket-producer price relationships for fluid milk in California. *California (Berkeley)*.
- WILLIAM W. ALBERTS, B.A. Chicago 1948; M.A. 1956. The mortgage market and the postwar residential construction cycles. *Chicago*.
- JOHN R. ALLISON, B.S. Pennsylvania State 1955; M.S. 1956. The economies associated with size of pear-producing firms. *California (Berkeley)*.
- VICTOR F. AMANN, B.S. Minnesota 1956. Analysis of the role of management in Minnesota farm supply cooperatives. *Minnesota*.
- ARVID ANDERSON, B.B.A. Texas 1957; M.B.A. 1960. Forecasting the demand for port facilities: a case study of the Lower Rio Grande Valley, Texas. *Texas*.
- JAMES L. APP, B.S. Minnesota 1957; M.S. Wisconsin 1960. Vegetable crop enterprise selection in the central sand plain of Wisconsin. *Wisconsin*.
- LUDWIG AUER, B.S. Manitoba 1957; M.S. 1959. The impact of technology on U.S. feed grain and wheat production. *Iowa (Ames)*.
- GEORGE W. BLEILE, B.A. Willamette 1956. Analysis of the location of manufacturing activity in urban areas. *Northwestern*.
- JOHN S. BOTTUM, B.S. South Dakota State 1957; M.S. Purdue 1960. Analysis of the adjustment of agricultural resource use patterns in central Indiana (An application of the production function approach). *Purdue*.
- DAVID H. BOYNE, B.S. Michigan State 1957; M.A. Chicago 1960. Changes in the real wealth position of owners of agricultural assets. *Chicago*.
- JOHN P. BRAND, B.S. Cornell 1955; M.S. Purdue 1959. Case study of an owner-integrated poultry enterprise. *Purdue*.
- OSCAR R. BURT, B.S. Nebraska 1958. The economics of conjunctive use of ground and surface water. *California (Berkeley)*.
- WALTER R. BUTCHER, M.S. Iowa (Ames) 1956. Production control restraints and efficient use of agricultural resources. *Iowa (Ames)*.
- FRANCESCO DE STEFANO, Dott. Agr. Sci. Naples 1956. Agricultural market reorganization as a phase of the economic development of southern Italy. *California (Berkeley)*.
- HAROLD R. DILBECK, B.S. Fresno State 1956; M.B.A. California (Los Angeles) 1958. The effect of credit conditions on residential construction in several U.S. metropolitan areas, 1953-1959. *California (Los Angeles)*.
- VICTOR G. EDMAN, B.S. Arizona 1949; M.A. 1956. Economic factors affecting the Florida chick hatchery industry. *Florida*.
- ROLLO EHRlich, B.S. Minnesota 1957; M.S. 1959. Analysis of relationships in hard red spring wheat prices. *Stanford*.
- DUANE E. ERICKSON, B.S. North Dakota State 1953; M.S. Minnesota 1959. An economic analysis of the feeder cattle enterprise. *Minnesota*.
- WALTER P. FALCON, B.A. Iowa (Ames) 1958; M.A. Harvard 1960. An analysis of factors affecting agriculture crop output in West Pakistan. *Harvard*.
- DAVID E. FELDMAN, B.S. London 1948. The instability of factor incomes from coffee: an international comparison for the postwar period. *Harvard*.
- JOHN M. FITZPATRICK, B.S. McGill 1950; M.S. Purdue 1952. Impact of seasonality of milk supplies in plants manufacturing dairy products. *Purdue*.
- OLAN D. FORKER, B.S. Purdue 1950; M.S. Michigan State 1958. Short and long term adjustments in the dairy product manufacturing industry of California. *California (Berkeley)*.

- EARL I. FULLER, B.S. Michigan State 1955; M.S. 1957. An evaluation of alternative labor data for farm planning. *Minnesota*.
- DENIS J. GAYDON, B.A. Cambridge 1952; Dipl. Agric. Econ. Oxford 1953. Feeder pig price and marketing policies. *Purdue*.
- JAMES R. GIBBONS, M.S. Illinois 1946. Costs, economies of scale in steer feeding and alternate production methods in relation to overall farm resource use. *Iowa (Ames)*.
- ANTONIO H. GILES, B.S. National University of Agric. (Peru) 1956; M.S. Utah State 1959. Allocation of water resources. *Iowa (Ames)*.
- RICHARD J. GOODMAN, B.S. North Dakota State 1953; M.S. 1958. Organization, structure, and competitive behavior of the Twin Cities milk market—producer to distributor level. *Minnesota*.
- HENRY A. GREEN, B.S. Rutgers 1956; M.S. 1958. An analysis of the employment potential of a low-income agricultural area. *Purdue*.
- IVAN R. HANSON, B.S. South Dakota State 1956; M.S. 1957. Developing economic criteria for water pollution control. *Wisconsin*.
- E. A. HASLETT, B.S.A. Ontario Agricultural College 1949; M.S.A. Toronto 1953. The role of agriculture in the economy of Ontario. *Toronto*.
- PAUL L. HELSING, B.A. Eastern Washington 1955. The fish-dam controversy: an economic appraisal. *Washington State*.
- JOHN P. HERZOG, B.S. California 1958. A dynamic analysis of the large-scale housebuilding industry, based on studies of California builders in the period 1950-60. *California (Berkeley)*.
- RALPH H. HOFMEISTER, B.S. Northwestern 1954. Economic development and energy resources: an appraisal. *Mass. Inst. Technology*.
- JARRETT HUDNALL, JR., B.B.A. Texas 1953; M.B.A. 1959. Price policies of liquid petroleum distributors. *Alabama*.
- NILS-IVAR ISAKSSON, Agron. Deg. Royal Agric. College (Sweden) 1958. Nature and elasticity of supply response in dairying. *Wisconsin*.
- JOHN A. JAMISON, B.A. Stanford 1947; M.B.A. 1949. Economic implications of the changing structure and organization of the California fresh deciduous fruit industry. *California (Berkeley)*.
- JACK L. KNETSCH, B.S. Michigan State 1955; M.S. 1956; M.P.A. Harvard 1958. Influence of multipurpose reservoirs on land values. *Harvard*.
- WALTER C. KOLT, Dr. Agr. Giessen 1959. An analysis of the adjustment problems in German agriculture under the Common Market arrangements. *Wisconsin*.
- RAJ KRISHNA, M.A. Delhi 1945. Supply responses of cotton in the Punjab. *Chicago*.
- RAYMOND KROFTA, B.S. Wisconsin 1958. Factors which determine economic responsiveness in firm organization in agriculture. *Wisconsin*.
- P. JOHN LYMBERPOULOS, B.S.C. Ohio University 1956; M.B.A. Texas 1959. The role and importance of the Agricultural Bank of Greece as a factor of economic development. *Texas*.
- MALCOLM H. MACDONALD, B.S. Cornell 1948; M.S. Hofstra 1958. National quota plans applied to milk. *Cornell*.
- JOHN R. MALONE, Ph. B. Notre Dame 1942; M.B.A. Harvard 1946. A statistical comparison of recent new and used house buyers. *Chicago*.
- CHARLES E. McALLISTER, B.S. Vermont 1954; M.S. 1955. Problems of inter-market relationships pertaining to federal milk orders. *Cornell*.
- WILLIAM L. McDANIEL, B.S. New Mexico 1958; B.A. 1958; M.A. Princeton 1960. Minimum cost water research development. *Princeton*.
- JIMMIE R. MONHOLLON, B.A. Wayland 1955; M.A. Wyoming 1956. History and appraisal of the Farmers Home Administration. *Vanderbilt*.

- TURNER L. OYLOE, B.S. South Dakota State 1954; M.S. 1957. Integration in the Minnesota turkey industry. *Minnesota*.
- DANIEL I. PADBERG, B.S. Missouri 1953; M.S. 1955. Changes in the nature and type of competition in the dairy industry in California. *California (Berkeley)*.
- WILLIAM L. PARK, B.S. Utah State 1957; M.S. 1958. Services performed by cooperative associations under milk marketing orders and methods of compensation for these services. *Cornell*.
- PATRICK J. PARKER, earlier degrees not given. Study of the economic impact of wildland fire protection expenditures in California. *Chicago*.
- HANS W. POPP, Dipl. Swiss Federal Inst. Technology 1957. The price elasticity of milk production in Switzerland. *Chicago*.
- CHARLES R. PUGH, B.S. North Carolina State 1951; M.S. 1954. Tenant ability and resource productivity on farms with management services in Indiana. *Purdue*.
- JOHN M. RICHARDS, B.A. Kansas 1956; M.S. Kansas State Teachers 1957. Residential preference, residential location and home-work separation. *Louisiana*.
- GLENN P. ROEHRKASSE, B.S. Wyoming 1951; M.S. 1953. Beef cattle production functions. *Iowa (Ames)*.
- EZRA SADAN, M.Sc. Hebrew 1959. An analysis of the consumption and production behavior of the leading forms of agricultural organization. *Chicago*.
- CHARLES A. SARGENT, B.S. Wisconsin State 1951; M.S. Wisconsin 1960. Opportunities for Wisconsin dairymen under a supply control program. *Wisconsin*.
- LYLE P. SCHERTZ, B.S. Illinois 1953; M.S. 1953. An analysis of supply control mechanics in the feed livestock economy. *Minnesota*.
- RICHARD A. SIEGEL, B.A. California (Los Angeles) 1953; M.B.A. 1959. Inter-industry employment impact of the California residential construction industry. *California (Los Angeles)*.
- DANIEL G. SISLER, B.S.A. Purdue 1957; M.S. 1958. An economic appraisal of a direct payments program for the feed-livestock economy. *Cornell*.
- J. I. STEWART, B.A. Toronto 1935; M.Com. 1957; M.A. 1960. An economic analysis of the principles and procedures of valuation of real property in Canada. *Toronto*.
- MICHAEL D. SUND, B.S. Nebraska 1957; M.S. 1959. Contribution of institutional economics to a conceptual framework for land reform. *Wisconsin*.
- OM PRAKASH TANGRI, B.A. Panjab 1952; M.A. 1956. India's program for agricultural development: uses and effectiveness of loans from U.S. owned rupee funds acquired through sales of agricultural surpluses. *California (Berkeley)*.
- ROBERT W. TAYLOR, B.S. Cornell 1956; M.S. Purdue 1959. Analysis of agricultural adjustment forces and relationships within Central Indiana (an application of mathematical programming). *Purdue*.
- ROBERT W. THOMAS, B.A. Iowa 1948; M.A. New Mexico 1951. Demand analysis applied to land resources. *Iowa (Ames)*.
- RUSSELL G. THOMPSON, B.A.B.A. Minnesota 1957. Optimal location and size of manufacturing dairy plants in Minnesota. *Minnesota*.
- WILLIAM G. TOMEK, B.S. Nebraska 1956; M.A. 1957. The theory and measurement of long-run demand (with special emphasis on food products).
- LUTHER TWEETEN, B.S. Iowa (Ames) 1954; M.S. Oklahoma 1958. The resource structure of U.S. agriculture. *Iowa (Ames)*.
- ETHEL VATTER, B.A. California 1923; M.A. 1952. The commodity composition and areal distribution of Iowa farm incomes 1948-1957. *Iowa*.
- EDUARDO L. VENEZIAN, Catholic (Chile) 1957; M.S. Iowa (Ames) 1959. Economic analysis of fertilizer response data. *Iowa (Ames)*.
- MELVIN M. WAGNER, B.S. Illinois 1954. Interregional competition in the frozen vegetable industry. *California (Berkeley)*.

- THOMAS D. WALLACE, B.S. Oklahoma 1956; M.S. 1957. An analysis of location shifts in meat packing. *Chicago*.
- HERBERT W. WARBURTON, B.S.A. Georgia 1954; M.S. 1959. An economic evaluation of fluid milk supply, movement, utilization, and potential demand in Florida. *Florida*.
- J. P. WARNER, B.Sc. London 1948; M.A. Alberta 1960. The possibilities of further manufacturing Canada's mineral products. *Toronto*.
- THOMAS A. WILSON, B.S. Ohio 1955; M.S. 1957. Destructive practices in the marketing of fluid milk, with an analysis of causes and evaluation of preventive measures. *Cornell*.
- ROBERT C. YOST, B.S. Indiana 1947; M.B.A. 1949. Determinants of the impact of the Ventura Freeway on adjoining land uses and property values in the San Fernando Valley, California. *California (Los Angeles)*.
- FLORENDO F. ZABLAN, B.A. East, 1950; M.A. 1953; M.S. Cornell 1956. Economics of beef cattle production in the Philippines. *Cornell*.

Labor Economics

Degrees Conferred

- AURA-LEE AGETON, Ph.D. Southern California 1961. An investigation into planning techniques for maximization of manpower in England and in the United States.
- ALAN B. BATCHELDER, Ph.D. Harvard 1961. An economic and historical analysis of the causes of variation among northern standard metropolitan areas in productivity of Negro men in 1949.
- DAVID G. BROWN, Ph.D. Princeton 1961. Determination of salary and wage structures.
- JAMES D. BROWN, JR., Ph.D. Wisconsin 1961. Changes in inter-industry wage levels and cost-push inflation; the experience during the post-war period.
- ALBERT H. CLARK, Ph.D. Pennsylvania 1961. The development and operations of the employee retirement system operated by the city of Philadelphia.
- ANDREW J. COOPER III, Ph.D. Princeton 1961. The wages of airline pilots: the system of wage computation, the wage level and the wage structure of pilots employed by U.S. scheduled airlines.
- N. F. DAVIS, Ph.D. Indiana 1960. Trade unions' practices and the Negro worker—the establishment and implementation of AFL-CIO anti-discrimination policy.
- FRANCIS S. DOODY, Ph.D. Harvard 1961. Case studies in the theory of union growth, 1860-1920.
- J. D. DUNN, Ph.D. Alabama 1961. White-collar unionization in the Deep South.
- GEORGE E. EATON, Ph.D. McGill 1961. The development of trade unionism in Jamaica.
- JOHN C. ELAC, Ph.D. California (Los Angeles) 1961. The employment of Mexican workers in U.S. agriculture, 1900-1960; a binational economic analysis.
- MARJORIE S. GALENSON, Ph.D. California (Berkeley) 1961. Comparative real wages in the United States and eight European countries.
- GEORGE J. GORE, Ph.D. Michigan 1961. Industrial relations in leading Michigan highway construction firms.
- HARRY L. HALL, Ph.D. Southern California 1961. Wage differentials in theory and practice: the effect of status on wage differentials.
- JAMES D. HAMMOND, Ph.D. Pennsylvania 1961. The effect of mergers on private pensions.
- ROBERT I. HISLOP, Ph.D. Colorado 1961. The United States and the Union of Soviet Socialist Republics in the International Labor Organization.
- ARNOLD M. KATZ, Ph.D. Yale 1961. Cyclical unemployment and the secondary family worker.
- JAY B. KENNEDY, Ph.D. Indiana 1961. Protective labor legislation in Indiana.
- CARLOS J. LASTRA-GONZALEZ, Ph.D. Harvard 1961. The impact of minimum wages on a labor-oriented country.

- WILLIAM J. LEE, Ph.D. Catholic 1961. "Right to work" laws: some economic and ethical aspects.
- AMIRAM LEVTOV, Ph.D. New York 1961. Labor-management cooperation programs: some hypotheses and findings.
- WILLARD A. LEWIS, Ph.D. New York 1961. The extent of judicial enlargement of labor dispute disqualification concepts in state unemployment compensation laws: a study in statutory construction with special emphasis upon the impact on managerial decision-making in the areas of personnel and labor relations.
- JOSEPH J. MELONE, Ph.D. Pennsylvania 1961. Collectively-bargained multi-employer pension plans.
- HIKMAT NABULSI, Ph.D. Georgetown 1961. Labor organization and development in Syria 1946-1958.
- JOHN C. O'BRIEN, Ph.D. Notre Dame 1961. An analysis of the standards of administration of union welfare and pension funds.
- CLAIR A. PETERSON, Ph.D. Mass. Inst. Technology 1961. Supply of scientific and engineering manpower.
- LEONARD RICO, Ph.D. Mass. Inst. Technology 1961. Information processing and the management of personnel: a survey of recent experience with computer technology.
- RAYMOND R. RITTI, Ph.D. Cornell 1960. Engineers and managers: a study of engineering organization.
- RAY C. ROBERTS, Ph.D. North Carolina 1961. Collective bargaining in the motor freight industry.
- RICHARD L. ROWAN, Ph.D. North Carolina 1961. Some aspects of the growth of organized labor and public policy.
- DANIEL M. SLATE, Ph.D. Washington 1961. Monopsony in the labor market: a case study of the Hawaiian sugar industry.
- CYRUS F. SMYTHE, JR., Ph.D. Washington 1961. Protection of individual rights in collective labor relations.
- VLADIMIR STOIKOV, Ph.D. Johns Hopkins 1961. The allocation of scientists and engineers.
- NAM WON SUEH, Ph.D. California (Berkeley) 1961. Dependent organization with emphasis on labor organization.
- KOJI TAIRA, Ph.D. Stanford 1961. The dynamics of Japanese wage differentials, 1881-1959.
- JAMES E. WILLIAMS, Ph.D. Wisconsin 1961. Labor relations in the telephone industry.
- PAUL A. WEINSTEIN, Ph.D. Northwestern 1961. Featherbedding and racketeering: an analytic and legal study.
- ALBERT E. WOLFF, Ph.D. Texas 1961. An approach to estimating production performance on nonrepetitive work.

Theses in Preparation

- MAHMUD M. AL-HABIB, B.A. Texas 1953; M.A. 1955. Government policies and the labor movement in the Middle East. *Wisconsin*.
- LUTHER L. BAILEY, B.B.A. Texas 1950; M.B.A. Southern Methodist 1958. Study of selected areas of information provided by employers in collective bargaining in Texas. *Texas*.
- HOWARD BLOCH, B.A. Duke 1958; M.A. Princeton 1960. Difficulties of cutting labor costs in the presence of a strong trade union. *Princeton*.
- VERNON E. BUCK, B.A. Yale 1956; M.S. Cornell 1960. Perceived job pressure as a function of several variables. *Cornell*.
- MAHINDER D. CHAUDHRY, M.A. Delhi 1952. Trained manpower requirements in a developing economy: case study of India. *Duke*.
- MYONG CHE CHON, B.A. Seoul National University 1948; M.A. 1950. An international comparison of patterns in inter-industry wage differentials. *Stanford*.

- FRANK E. COTTON, JR., B.S. Mississippi State 1946. Major changes in the Mississippi labor force; their causes and effects. *Pittsburgh*.
- THOMAS O. DEPPERSCHMIDT, B.A. Fort Hays State 1958. The "duty to bargain" in federal labor law. *Texas*.
- GEORGE E. DESHON, B.A. California (Los Angeles) 1937; M.B.A. Texas 1953. Fringe benefits in department stores. *Texas*.
- PHILIP DURIEZ, B.A. New Mexico Western 1959; M.A. Baylor 1950. Work rules problems in railroads. *Louisiana State*.
- LLOYD J. ELLIOTT, B.S. St. Mary's 1955; M.B.S. Houston 1955. The employment problem in a mature economy. *Texas*.
- MORELLE J. EMERSON, JR., B.A. Luther 1957; M.A. Iowa 1960. Variation and transition in the spatial distribution of retail employment in Iowa. *Iowa*.
- FRANCIS W. GATHOF, JR., B.S. American 1956; M.A. 1956. Labor organization: its economic power. *American*.
- JACK H. GORE, B.A. New Mexico 1952; M.A. 1959. A theory of the seasonal agricultural labor market. *Colorado*.
- GÉRARD J. HÉBERT, B.A. Montréal 1942; Lic. phil. Collège de l'Immaculée Conception 1947; Lic. theol. 1954. The juridical extension of collective agreements in the Quebec construction industry. *McGill*.
- JOHN R. HINRICHS, B.A. Johns Hopkins 1951; M.S. Purdue 1956. The impact of industrial organization on the attitudes of research chemists. *Cornell*.
- GEORGE C. HOYT, B.A. Stanford 1950; M.A. Chicago 1954. A study of retirement problems. *California (Berkeley)*.
- LAWRENCE A. JOHNSON, B.S. Boston 1955; M.B.A. 1958. Industrial relations in the tobacco industry of the United States. *Stanford*.
- DAVID E. KAUN, B.S. Arizona State 1955; M.A. Claremont 1958. Minimum wage and the structure of wages; effects and consequences, 1945-1958. *Stanford*.
- ERWIN L. KELLY, JR., B.A. California 1954. The Negro in unions in the New Orleans area during the nineteenth century. *Tulane*.
- THOMAS K. KIM, B.A. Berea 1952; M.B.A. Indiana 1954. The growth of per capita personal income of the southeastern region of the United States, 1941-1950. *Tulane*.
- GUNDAR J. KING, B.B.A. Oregon 1956; M.B.A. Stanford 1958. Manpower in Soviet Latvia. *Stanford*.
- DAVID KLEINERMAN, B.S. Northwestern 1948; M.A. DePaul 1954. Ability to pay wages—concept and measurement. *Chicago*.
- ROBERT G. LANDOLT, B.A. Austin 1934; M.A. 1937. Historical relevancies of the supply of Mexican workers to the development of the industrial labor movement in Texas. *Texas*.
- CHARLES F. MARTIN, B.A. Wayne 1956; M.A. Mississippi 1957. History of organized labor in the Atlanta, Georgia, area. *Louisiana State*.
- JOSEPH MCGOVERN, B.S. Villanova College 1941. The historical impact of Philip Murray in the field of labor relations. *Georgetown*.
- ARLYN J. MELCHER, B.A. Bakersfield 1951; B.S. California 1953; M.B.A. California 1954. Collective bargaining in the agricultural implement industry: impact of company and union structure on development of collective bargaining in three companies. *Chicago*.
- DANIEL MULVEY, M.A. Fordham 1952. An inquiry concerning the theories on inter-industry wage structure. *Georgetown*.
- FREDERICK S. O'BRIEN, B.S. Kansas 1954; M.A. Stanford 1958. Supply and demand for military personnel. *Stanford*.
- SAM F. PARIGI, B.S. St. Edward 1954; M.B.A. Texas 1957. A study and analysis of the unionization of Latin Americans in Austin, Texas. *Texas*.

- ROY PENCHANSKY, B.S. St. Peters 1956; M.I.L.R. Cornell 1958. Operation and problems of health and welfare plans in the building trade industry. *Harvard*.
- PETER A. PROSPER, B.S. Pennsylvania State 1958; M.A. North Carolina 1959. Suitable work under employment compensation laws in the United States. *Cornell*.
- EDWARD REIGHARD, B.A. Middlebury 1926; B.D. Yale 1929; M.B.A. Stanford 1954. The effect of collective bargaining upon featherbedding since the passage of the Taft-Hartley Act. *Stanford*.
- JENNIE RICHMOND, B.A. Maine 1944; M.A. 1946. Apprenticeship and industrial training programs and the supply of skilled labor. *Boston*.
- ALEX J. SIMON, B.B.A. Texas 1950; M.B.A. 1956. Effective employment of the physically handicapped. *Texas*.
- LOUIS A. SIMPSON, B.A. Ohio Wesleyan 1958; M.A. Princeton 1960. The labor market for research development personnel. *Princeton*.
- DONALD R. SNODGRASS, B.A. Miami 1957; M.A. Yale 1958. Wage-rate changes and other influences on the general level of wages. *Yale*.
- ERNST STROMSDORFER, B.A. Washington (St. Louis) 1958; M.A. Illinois 1959. Structural unemployment in the United States: 1947-1962. *Washington (St. Louis)*.
- RIAD B. TABBARAH, B.A. American (Beirut) 1956. Population and labor force response to economic development. *Vanderbilt*.
- KOJI TAIRA, B.A. New Mexico 1953; M.A. Wisconsin 1954. The dynamics of Japanese wage differentials, 1881-1959. *Stanford*.
- EDWIN F. TERRY, B.S. Oklahoma 1950; M.A. Kansas 1956. Homer Hoyt's urban employment multiplier. *Iowa (Ames)*.
- JACK N. THORNTON, B.A. Wittenberg 1949; M.Lit. Pittsburgh 1950. Industrial relations and collective bargaining in the plastics and allied products industry. *Louisiana State*.
- JOHN WITTMAN, JR., B.S. Southern State 1957; M.B.A. Arkansas 1958. Characteristics of industrial labor force mobility in the state of Arkansas. *Arkansas*.
- HAROLD WOOL, B.S. Brooklyn 1936. Skilled manpower needs and resources of the armed forces—trends and implications. *American*.
- JOSEPH S. ZEISEL, B.S. New York 1947. Frictional unemployment in Great Britain and the United States. *American*.

Population; Welfare Programs; Consumer Economics

Degrees Conferred

- PAUL G. DEMENY, Ph.D. Princeton 1961. Investment allocation and population growth.
- SAYED M. EL HAWARY, Ph.D. New York 1961. The role of consumption patterns in economic growth.
- GILBERT MARHOEFER, Ph.D. Pittsburgh 1960. Background and economic aspects of immigration to the United States and the world refugee problem.
- LARRY A. SJAASTAD, Ph.D. Chicago 1961. Income and migration in the United States.
- ELEANOR M. SNYDER, Ph.D. Columbia 1961. Low incomes in urban areas.
- CHESTER E. SWANK, Ph.D. Ohio State 1961. Levels of consumer food-buying knowledge, factors involved in consumer decision-making, and implications for consumer marketing economics programs.
- PAUL T. THERKILDSEN, Ph.D. Colorado 1960. Public welfare: a positive micro institutional and normative macro institutional approach.
- RICHARD G. WALSH, Ph.D. Wisconsin 1961. Private development, utilization and evaluation of recreation resources in northern Wisconsin.
- THORA G. WINAKOR, Ph.D. Iowa (Ames) 1960. Factors associated with changes in clothing expenditures in the United States, 1929-1958.

YASUKICHI YASUBA, Ph.D. Johns Hopkins 1961. Economics of the birth-rates of the white population, United States, 1800-1860.

Theses in Preparation

A. S. M. MOHIUDDIN AHMED, B.A. Dacca 1953; M.A. 1954. Human fertility and fertility differentials in Pakistan—a socio-economic and demographic study. *Duke*.

JUAN APONTE, B.S. Puerto Rico 1950; M.S. Michigan 1955. An analysis of government pension plans for the Commonwealth of Puerto Rico. *Pennsylvania*.

KAP SOO BANG, B.A. Chosun Christian University (Korea); M.A. Pennsylvania 1960. Social security programs in Great Britain, Japan, Malaya, and the United States, and proposed programs for Korea. *Pennsylvania*.

JACOB M. DUKER, B.A. Harvard 1942; M.B.A. 1947. A study of the consumption patterns of single and multiple earner families. *Chicago*.

MARIE DE VROET KOBRAK, B.A. Netherlands School of Economics 1956; M.A. Chicago 1960. Television set expenditures and ownership. *Chicago*.

J. WILLIAM LEASURE, B.A. New Mexico 1958; M.A. Princeton 1960. Fertility in Spain. *Princeton*.

BOYD H. LYNCH, B.A. Fresno State 1951. A study of costs and incomes in non-profit community hospitals. *Washington*.

JAMES E. MARTIN, B.S. Alabama Polytechnic 1954; M.S. North Carolina State 1956. An application of distributed lags in short-run consumer demand analysis. *Iowa (Ames)*.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Senior economist: Economics division of New York research institution has opening for senior economist. Ph.D. in economics and experience in economic research. Combined research and teaching background desirable. Familiarity with national income accounts and application of economic theory to analysis of current developments; writing experience and skill essential. Starting salary from \$10,000 to \$15,000, depending on qualifications. Liberal pension and other benefits. P242

Head, Department of Business Administration: Opening in a rapidly growing state college in the South. Doctor's degree in economics or in some field of business administration required. Departmental staff consists of ten full-time faculty members. Rank may be professor and salary may be to \$11,000 for eleven months depending upon qualifications. Write: Dean Thomas J. Stanly, Nicholls State College, Division of Applied Sciences, Thibodaux, Louisiana.

Petroleum economist: A major oil company offers opportunity in the southwest for an economist with a graduate degree, doctorate preferred. Experience in the petroleum industry would be helpful but not required. Position requires ability to conduct independent research on a wide variety of problems related to industry and company operations. Salary depends upon education and experience. Please send résumé giving full account of professional background and experience. All replies will remain strictly confidential. P243

Marketing-statistics: Southwestern four-year senior college with 8,000 enrollment, business and economics staff of 30, seeks outstanding man to teach combination marketing and business statistics. Salary \$6,500 up for 9 months, with rank of full professor, depending upon qualifications. Please send complete résumé and small photo. Write to Dr. W. B. Nelson, Head, Department of Business and Economics, Arlington State College, Arlington, Texas.

Accounting: Southwestern four-year senior college with present accounting staff of five seeks experienced accounting instructor with master's and C.P.A. and/or doctorate. Salary \$7,000 and up for 9 months. Please send complete résumé and small photo. Write to Dr. W. B. Nelson, Head, Department of Business and Economics, Arlington State College, Arlington, Texas.

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Head, Department of Economics: Rank of professor. Ph.D. in economics, teaching experience, publications, and experience in directing doctoral dissertations are required. Salary dependent on qualifications. Midwest, September, 1962. P244

Head, Department of Agricultural Economics and Farm Management: University of Alberta invites applications for position of professor (or associate professor) and head of a department of agricultural economics and farm management which is being established. Minimum salary \$9,000 for associate professor and \$12,000 for professor. Applicants should hold Ph.D. degree or equivalent with specialization in agricultural economics and/or farm management and should have a strong background in economics. Duties will include the initiation and development of a research program, undergraduate and graduate teaching and some extension work. Duties to commence as early as practicable but no later than September 1, 1962. Enquiries about details and prospects should be sent to: Dean, Faculty of Agriculture, University of Alberta, Edmonton, Alberta, Canada.

Economists Available for Positions

Economics: Man, 45; M.A., Ph.D. (economics). Years of teaching experience; Ford Foundation grant. Now on a university faculty. Desires teaching or research position in Southwest or West with above-average responsibilities. E952

Investments, finance, international relations: Man, 57; M.A., M.S., Ph.D. Broad business experience as well as teaching experience, including administration as department head; various publications; presently professor of finance; excellent references. Desires position teaching above subjects. Available in fall, 1961. E962

Money and banking, mortgage finance: Man, 32; Ph.D. course work completed. Seventeen months of experience as director of research for a banking association; 1 year on an international trade project; good knowledge of Spanish. Desires a staff position in research or administration with private industry or a teaching-administrative position with a university. E971

Marketing, statistics, economic analysis, money and banking, international economics, public finance, history of economic thought: Man, married; Ph.D. dissertation in process. Nearly 15 years of responsible professional experience in directing and conducting economic and marketing research for management. Fellowship; university teaching. Seeks teaching or business position. E975

International economics, economic development, macroeconomics, public and business administration: Man, 29; Ph.D., Columbia University, M.B.A., Harvard University. Three years of teaching experience at graduate and undergraduate levels; economist with an international organization; some industrial experience. E979

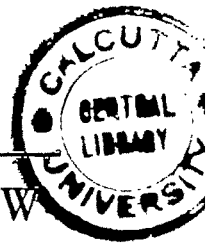
Economic theory, labor, finance: Man, in 40's. Twenty years of postdoctoral research, writing, and teaching. Primarily interested in graduate level instruction and research. In *Who's Who in America*, *Who's Who in Commerce and Industry*, etc. E980

Economics, money, banking, and finance, accounting, business law, management: Man, 56; J.S.D., Ph.D. Experienced college economics teacher; professional experience in law and accounting practice. Norman S. Lehrman, 1300A Midland Avenue, Yonkers, N.Y.

Business management, business ethics, marketing, public finance, investments, economic principles, business history and trends: Man, 45, married; M.A., work toward Ph.D. Fifteen years in business management; assistant to chief executives. Also some teaching, newspaper and magazine editorial work, and city planning; presently management consultant; publications; conservative leanings. Wishes to devote full time to teaching and writing. E988

Economic planning, research studies: Man; B.S. Economics, B.S. Foreign Trade, M.A. Business. Eleven years of experience in all phases of comptroller; presently a research analyst with a university. Will relocate. Salary open. E990

Labor economics, manpower, personnel, and industrial relations: Man, late 30's; B.A. in Economics and Sociology, M.A. in Economics, some course work toward doctorate. Experience in above fields and research, with operational experience in last field; editing and publications; writing; teaching. Presently employed. In *Who's Who in South*; foreign travel; some knowledge of Spanish. Minimum salary circa \$10,000 per annum with chance to advance. E992



THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Rendigs Fels
Arnold C. Harberger
Alfred E. Kahn
Joseph A. Pechman

Melvin W. Reder
Tibor Scitovsky
Robert Solow
Wolfgang F. Stolper

Volume LI

DECEMBER 1961

Number 5

ARTICLES

- The American Baby Boom in Historical Perspective *R. A. Easterlin* 869
- The Role of Money in Trade-Balance Stability:
Synthesis of the Elasticity and Absorption
Approaches *S. C. Tsiang* 912
- Differential Changes in the Prices of Consumers'
and Capital Goods *R. A. Gordon* 937
- The Elasticity of the Marginal Efficiency Function *Lorie Tarshis* 958
- The Size Structure of the Largest Industrial Firms,
1909-1958 *N. R. Collins*
and L. E. Preston 986
- The Simultaneous Determination of Spot and
Futures Prices *J. L. Stein* 1012

COMMUNICATIONS

- Investment in Human Capital:
Comment *Harry G. Shaffer* 1026
Reply *T. W. Schultz* 1035
- The Differential Effects of Tight Money:
Comment *Deane Carson* 1039
Reply *G. L. Bach and C. J. Huizenga* 1042
- Measuring the Success of the Elementary Course:
Comment *Rendigs Fels* 1044

BOOK REVIEWS

- ADLER, Recursos financieros y reales para el desarrollo, by J. Grunwald 1078
- ASHWORTH, An Economic History of England 1870-1939, by J. R. T. Hughes 1087
- BENOFF, Europe at Sixes and Sevens—The Common Market, the Free Trade Association and the United States, by W. J. R. Woodley 1111

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

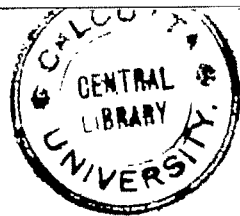
Copyright American Economic Association 1961

BENSUSAN-BUTT, On Economic Growth—An Essay in Pure Theory, by E. D. Domar	1062
BÖHM AND WILLE, Direct Costing und Programmplanung, by E. M. Fels	1112
BOLINO, The Development of the American Economy, by R. B. Sheridan	1086
BOMBACH, editor, Stabile Preise in wachsender Wirtschaft: Das Inflationsproblem, by F. Machlup	1058
BRY, Wages in Germany, 1871-1945, by K. R. Petshek	1120
BUTLER, Labor Economics and Institutions, by E. F. Cheit	1126
CARTER AND SNAVELY, Intermediate Economic Analysis, by S. Schoeffler	1071
CSIKOS-NAGY, Problemy tseonoobrazovania i politika tsen (Problems of Price Formation and Price Policy), by V. Holubnychy	1093
ERLICH, The Soviet Industrialization Debate, 1924-1928, by B. Shoul	1082
FELS, Challenge to the American Economy, by K. A. Knopf	1047
FLORENCE, Ownership, Control and Success of Large Companies: An Analysis of English Industrial Structure and Policy, 1936-1951, by R. W. Mayer	1115
GREENHUT AND JACKSON, Intermediate Income and Growth Theory, by R. S. Weckstein	1072
HAAVELMO, A Study in the Theory of Investment, by J. A. Stockfish	1064
HARRIS, editor, American Economic History, by H. J. Cranmer	1076
HARRISS, Money and Banking, by E. W. Lawson	1102
HENDERSON, National Income: Statistics and Dynamics, by V. C. Heck	1074
HICKMAN, Growth and Stability of the Postwar Economy, by S. G. Triantis	1066
HICKS, Development from Below: Local Government and Finance in Developing Countries of the Commonwealth, by H. P. Wald	1103
HIRSCHMANN, editor, Latin American Issues: Essays and Comments, by T. A. Sumberg	1080
IMBERT, Des mouvements de longue durée Kondratieff, by G. Garvy	1096
ISE, Our National Park Policy: A Critical History, by E. N. Castle	1117
JOCHIMSEN, Ansatzpunkte der Wohlstandsökonomik, by W. Froehlich	1068
LYON, Investment Portfolio Management in the Commercial Bank, by A. F. Brimmer	1100
MARGET AND TRIFFIN, Los pagos internacionales y la política monetaria, by O. Herschman	1109
MESTMÄKER, editor, Franz Böhm: Reden und Schriften, by R. C. Bernhard	1046
MOORE, editor, Business Cycle Indicators, by M. Bronfenbrenner	1094
MORRIS, Fundamentals of Economics, by J. E. Maher	1049
RÄDLER, Die direkten Steuern der Kapitalgesellschaften und die Probleme der Steueranpassung in den sechs Staaten der europäischen Wirtschaftsgemeinschaft, by F. K. Mann	1106
SALANT AND VACCABA, Import Liberalization and Employment, by M. E. Kreinin	1107
SCHURR AND NETSCHERT, Energy in the American Economy 1850-1975: Its History and Prospects, by L. G. Hines	1116
SELLIER, Stratégie de la lutte sociale: France 1936-1960, by E. J. Berg	1124
SHUBIN, Managerial and Industrial Economics, by D. J. Hart	1113
SIRKIN, Introduction to Macroeconomic Theory, by D. A. Baerncopf	1075
SMITH, Federal Tax Reform, by C. W. Macy	1105

SOMERS AND SOMERS, Doctors, Patients, and Health Insurance, by M. Roberts	1129
STIEBER, The Steel Industry Wage Structure—A Study of the Joint Union-Management Job Evaluation Program in the Basic Steel Industry, by S. Barkin	1118
TAMAMES, Estructura económica de España, by J. Hein	1085
TRIPP, Labor Problems and Processes, by T. Wolfson	1127
TSURU, editor, Has Capitalism Changed? An International Symposium on the Nature of Contemporary Capitalism, by M. E. Dimock	1091
WEINTRAUB, Classical Keynesianism, Monetary Theory, and the Price Level, by P. W. Cartwright	1056
WERNETTE, Growth and Prosperity Without Inflation, by M. O. Clement	1069
WILSON, Inflation, by M. Friedman	1051
Government Price Statistics, Part I. Hearings and Report, Subcommittee on Economic Statistics. Joint Economic Committee, by A. E. Pierce	1089
1960 Survey of Consumer Finances, by J. L. Weston	1098

OTHER DEPARTMENTS

Titles of New Books	1132
Periodicals	1148
Notes	1161



The American Economic Review

VOLUME LI

DECEMBER 1961

NUMBER FIVE

THE AMERICAN BABY BOOM IN HISTORICAL PERSPECTIVE

By RICHARD A. EASTERLIN*

The attitude of economists toward population growth is curiously ambivalent. The *effects* of population growth are accepted as important and have been accorded considerable analytical attention. One need only recall the prominent role played by declining population growth in the secular stagnation thesis of the late 'thirties and early 'forties [19] [20] [24].¹ With regard to the *causes* of population growth, however, the attitude of economists can best be characterized as *laissez-faire*.² At the risk of generalizing too freely, it would probably be fair to say that the typical treatment of population growth in economic theories is as an exogenous variable, whose movement is given by demographers. One purpose of the present paper is to suggest that there is scope for fruitful research into the causes of population change compatible with economists' training and experience. The vehicle for this

* This is a study by the National Bureau of Economic Research, and has been approved for publication by its Board of Directors. It will be reprinted in the National Bureau's series of Occasional Papers. The paper is part of a broader inquiry into long swings in American economic growth being conducted at the NBER under the direction of Moses Abramovitz [1].

The author, a member of the National Bureau's research staff, is professor of economics, University of Pennsylvania. This paper owes a substantial debt to Moses Abramovitz and Simon Kuznets; to Dorothy Swaine Thomas, Everett S. Lee, and Hope Tisdale Eldridge of the University of Pennsylvania Population Research Center; and, for excellent research assistance, to Chantal de Molliens, Søren T. Nielsen, Radivoj Ristic, and Marcel Tenenbaum. The author also wishes to thank Gary S. Becker, Arthur A. Campbell, Joseph S. Davis, Solomon Fabricant, Jacob Mincer, and Geoffrey H. Moore for their critical review of the manuscript. The comments of V. W. Bladen, Marion B. Folsom, Gottfried Haberler and H. W. Laidler of the National Bureau's Board of Directors were of value. Use of the facilities of the Stanford University Research Center in Economic Growth in 1960-61 is gratefully acknowledged. James F. McRee, Jr., edited the manuscript and H. Irving Forman drew the charts.

¹ For an excellent analysis of the consequences of the rise in the rate of population growth associated with the baby boom, see Joseph S. Davis [10] and, more recently, [8].

² It is encouraging to be able to note some significant recent exceptions provided by the work of Gary S. Becker [70, pp. 209-31], Everett E. Hagen [18], Harvey Leibenstein [32], and Bernard Okun [36].

discussion is the recent baby boom. We first take a fresh look at the historical record in the light of the Kuznets-cycle conception of economic change,³ taking care to distinguish the experience of three population groups with significantly different patterns—foreign-born, native-born urban, and native-born rural. Then some possible reasons for the patterns observed are explored. The analysis is confined to the white population because of the greater reliability of the data for this group and its predominant influence in determining the pattern for the total.

I. Kuznets Cycles in U.S. Population Growth and Fertility

A. The Rate of Total Increase

We start with the rate of population growth. Since we are interested in focusing on major movements, we employ five-year averages of the basic data,⁴ a choice governed partly by preference—to eliminate or at least reduce the shorter-term changes associated with the ordinary business cycle—and partly by necessity—because of the initial mold in which some of the basic data are cast, particularly those relating to fertility.

Figure 1 shows the average rate of increase of the U.S. white population in successive quinquennia from 1870-75 to 1955-59. The familiar downward drift through the 1930's and the recent increase are immediately apparent. Less familiar, but equally obtrusive, are significant fluctuations in the rate of change. The duration of the fluctuations has run from 10 to 35 years and their average magnitude has amounted to about one-quarter of the mean rate of change over the period as a whole. In a recent article [27] these fluctuations were subjected to analysis by Simon Kuznets, who found that while all three components of population change—fertility, mortality, and immigration—showed evidence of these swings, either in level or rate of change, major surges and relapses in immigration typically accounted for the

³See the studies by Simon Kuznets [26]-[29], Moses Abramovitz [1] [3] [4], and Arthur F. Burns [7]. Among recent contributions are Brinley Thomas [42], R. C. O. Matthews [35, Ch. 12], and P. J. O'Leary and W. Arthur Lewis [37]. The name "Kuznets cycle" is suggested by O'Leary and Lewis and is adopted here because it is a more distinctive designation of these (typically) 15- to 20-year movements than are terms such as "long swings" or "long waves," which may be confused with the much longer Kondratieff. It is somewhat regrettable that O'Leary and Lewis used the term "cycle," with its inevitable implications of a self-generating process, rather than a more neutral word such as "movement." Use of the designation here is not intended to imply commitment to a self-generating view of these fluctuations.

⁴For the rate of total increase, the average is implicit. The rate, which is actually calculated from observations on the population stock separated by five years, yields a time pattern equivalent to that of a geometric average of the annual rates of change within the successive quinquennia.

greatest part of the change in total. He then linked these waves in immigration to corresponding swings in the rate of development of the U.S. economy, and suggested that the immigration movements were best explained as a response to swings in the demand for labor in the United States. This view has been supported along somewhat different lines by Moses Abramovitz and the present writer [3] [4] [11].

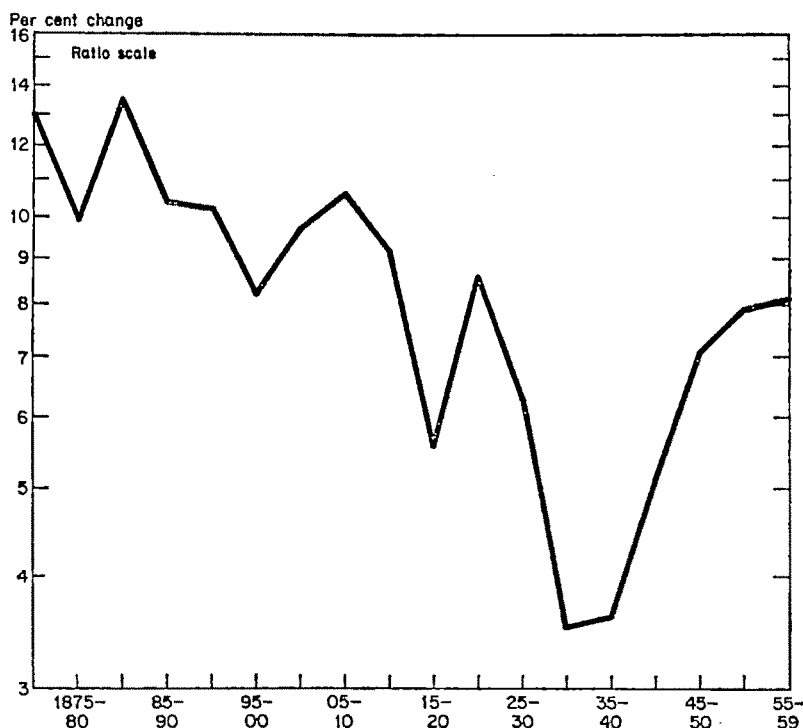


FIGURE 1. RATE OF CHANGE OF TOTAL WHITE POPULATION, 1870-75/1955-59

Source: Table A-1.

Since 1870, then (and indeed even before [27, p. 36] [29]) the historical record has consistently been marked by major swings in the rate of population growth. But since the source of the recent upsurge in the rate of population growth has been a rise in the birth rate rather than in immigration, one might maintain that this recent increase bears only a surface resemblance to prior swings and that, given the new immigration restrictions of the 'twenties, recovery in the rate of growth was hardly to be expected. Whether this view is correct or whether the recent movement does bear a logical relation to its forebears is a question to which we shall return toward the end of the paper.

B. The Birth Rate of the Total White Population

Let us turn to the component of population change that constitutes the center of our interest, the birth rate. Recent work has made it possible to reconstruct a full century of fertility experience for the white population of the United States.⁵ The annual birth rate estimates have been averaged here for successive quinquennia, in keeping with our interest in discerning Kuznets cycles.

The upper panel of Figure 2 brings out clearly the long-term decline in the level of the birth rate and its recent recovery. It also shows that the movement of the birth rate—even when smoothed by a five-year average—has been far from regular. For the period through the secular trough of the 'thirties, intervals of rapid decline alternated with intervals of slower decline or even absolute increase. These are the long swings in fertility which Kuznets found in a somewhat different set of figures. They are apparent throughout the entire 80-year period of fertility decline covered here.

The lower panel of Figure 2 presents the quinquennial percentage rate of change of the birth rate, computed directly from the data plotted in the upper panel.⁶ The average rate of decline per quinquennium through the secular trough in 1935-39 was about 6 per cent. If this rate had prevailed uniformly throughout the entire period, the individual observations would have formed the horizontal line shown in the figure. The movement in the actual observations about the line makes clear that the variations in the rate of change were of substantial magnitude; in fact, the average value of the deviations from the mean amounts to six-tenths of the mean rate of decline itself. The duration of the two swings through the first decade of this century was 15 to 20 years, whether measured peak to peak or trough to trough. The movements since then have been of much longer duration, on the order of 35 to 40 years.

⁵ Economists are perhaps not generally aware of the scarcity of historical data on population change. When Kuznets made his study only four years ago, there were no annual data on the crude birth rate before 1909. The new series, extending our perspective to the years before the Civil War, is the product of a doctoral dissertation by Melvin Zelnick, carried on at the Office of Population Research, Princeton University, under the supervision of Ansley Coale [73]. The estimates were derived by applying appropriate mortality rates to the decennial census single-year-of-age distributions adjusted for "age heaping" (excessive reporting of certain ages, primarily those ending in 0 and 5). As the upper panel of Figure 2 shows, the patterns traced by these and the official estimates in the overlap period are virtually the same; for earlier dates, however, the Zelnick figures are somewhat less reliable because of the lesser accuracy or availability of data needed for the estimates.

⁶ To avoid confusion, it should be noted that (1) it is the birth rate itself and not the rate of change therein that is the component of the rate of total population change shown in Figure 1, and (2) swings in annual birth or fertility rates do not necessarily imply swings in the completed fertility of successive population cohorts.

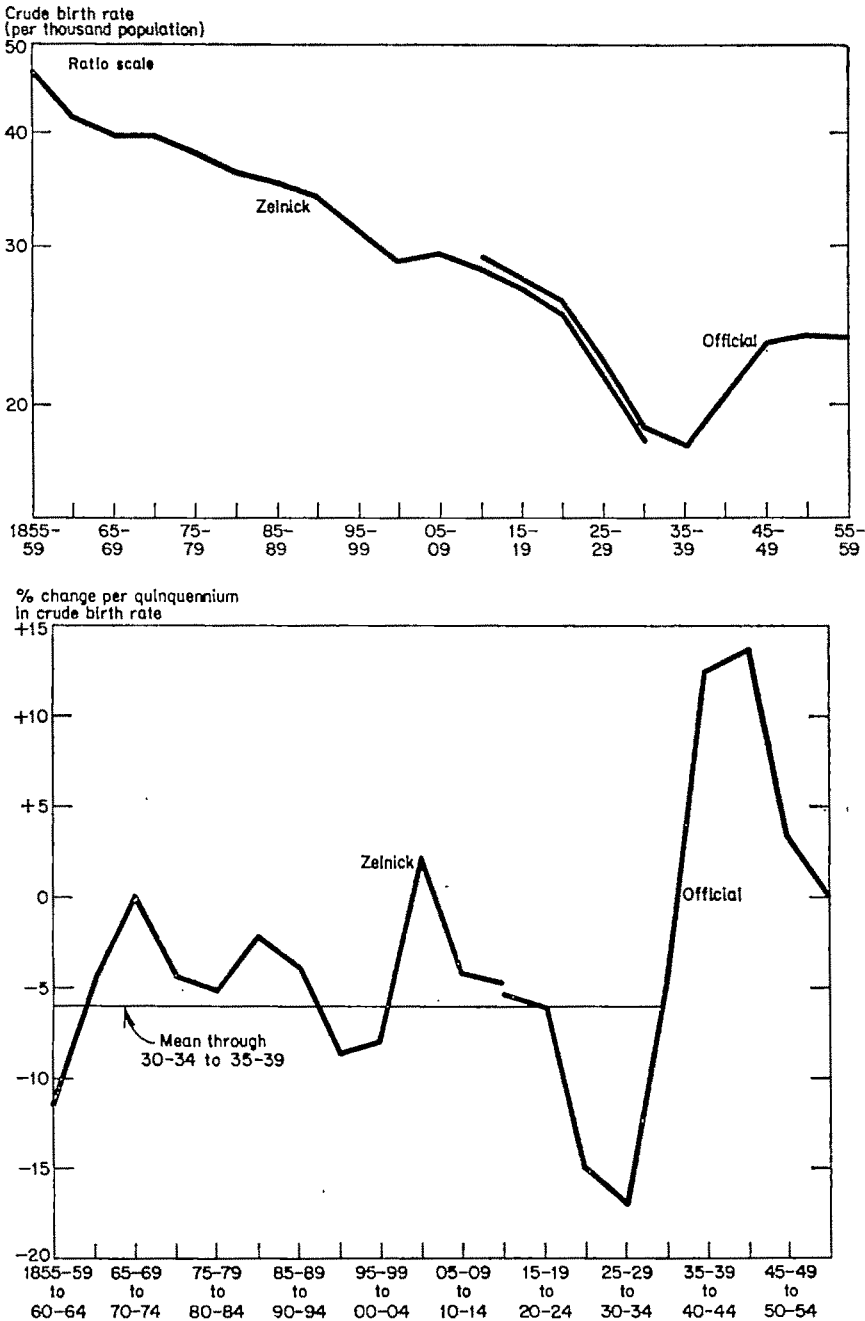


FIGURE 2. LEVEL AND RATE OF CHANGE, CRUDE BIRTH RATE OF TOTAL WHITE POPULATION
1855-59/1955-59

Source: Table A-2.

But of what interest, it may be asked, is this exercise in quantitative history for analysis of the baby boom? In reply, one might suggest that it leads to revision of one's conception of the historical record, a revision which has significant implications for the interpretation of recent experience. Typically, the historical movement which has been emphasized is the long-term secular decline.⁷ To this we would now add the observation that this decline has been far from regular; that, in fact, it has been repeatedly characterized by fluctuations of noticeable amplitude and substantial duration. The customary interpretation of the past leads naturally to the view that recent experience constitutes an abrupt break—a reversal in primary trend. In contrast, the conception of historical change employed here suggests that recent experience *might* be conceived as the latest in a succession of major movements around the trend—a Kuznets cycle which, for some reason, is of much greater amplitude and duration than its predecessors. Clearly this view implies less of a break with historical experience and at least raises the possibility of more easily reconciling the present with the past—a *sine qua non* of any attempted explanation of the baby boom. Moreover, it suggests a new research strategy with regard to the baby boom, namely, that one focus on Kuznets cycles, past and present, as the object of explanation in an effort to determine whether the underlying causes of these movements may have operated with exceptional force in recent decades. It is in terms of this conception that the subsequent analysis is organized.

Before proceeding to this analysis, there is one more feature of Figure 2 that deserves attention. This is the precipitous decline in the birth rate during the 1920's. A trend line fitted to the pre-1920 data in the upper panel and extended through the next two decades would lie not only above the observations for the 1930's, but above that for 1925-29 as well. From the lower panel, one finds that the rate of decline between the first and second halves of the 1920's was the second highest in the 100-year record, falling only slightly below that in the next overlapping decade. This drastic decline during a period of high prosperity has been cited by demographers as grounds for discounting efforts to explain the baby boom on the basis of economic factors. For example:

... the interpretation of the baby boom as the natural consequence of prolonged prosperity is hardly more tenable than the earlier interpretation of the reversal in the 1930's as momentary. The next earlier period of notable prosperity in the United States—the 1920's—was a period of

⁷ For examples of this see [66] [54] and more recently [16, Ch. 2, 11] [41, Ch. 13] [13].

sharply falling fertility. In fact, as Dudley Kirk points out, the depressed 1930's produced *more* births by far than one would expect on the basis of an extrapolation of the trend of the prosperous 1920's.⁸

Clearly, an attempt to reconcile present with past experience must devote special attention to the record for the 1920's.

C. The Fertility of the Native and Foreign-Born White Populations

The fertility of the total white population is a composite of that of a number of subgroups, each subject in part to distinctive, in part to common, influences. We can gain further perspective on the baby boom if we consider separately the experience of the native and foreign-born white populations, and, within the former, the urban and rural components. Table 1 indicates the proportion of total white females of reproductive age accounted for by each of these groups at various dates. In the present section, we consider fertility patterns for the foreign-born and *total* native white populations.

TABLE 1—PERCENTAGE DISTRIBUTION OF WHITE FEMALES, 20-44, BY NATIVITY, AND OF NATIVE WHITE FEMALES, 20-44, BY RURAL-URBAN RESIDENCE, 1890-1950

	1890	1910	1930	1950
Total white	100.0	100.0	100.0	100.0
Foreign-born white	20.9	19.9	14.7	4.6
Native white	79.1	80.1	85.3	95.4
Urban	30.2	39.6	51.5	64.7*
Rural	48.8	40.5	33.8	30.7

* Based on 1950 census definition of "urban."

Source: Census reports.

For our dependent variable, instead of the crude birth rate we now use the fertility ratio, the number of children under 5 years old to the number of women 20 to 44 years old, a choice necessitated by the avail-

⁸ Ansley J. Coale, Introduction, in [70, pp. 5-6]. The reference is to Dudley Kirk, "The Influence of Business Cycles on Marriage and Birth Rates" [70, pp. 241-60]. The method followed by Kirk in his analysis is to correlate "trend deviations of economic measures (as independent variables) to measures of nuptiality and natality (as dependent variables)" [70, p. 242], using fertility data for the total population for the period 1920-58. While the results are relevant to analysis of fertility variations within the ordinary business cycle, in our view they cannot be used to draw inferences about the baby boom. The "trend" lines fitted for the period 1920-58 largely reproduce the Kuznets cycle which constitutes the baby boom. By concentrating on explaining deviations from "trend," Kirk in effect eliminates from his analysis the baby boom itself. Moreover, even with regard to business cycle analysis, it would be of interest to distinguish components of the total population whose fertility was subject to substantially different influences, as is done below for Kuznets cycles.

able data.⁹ As the following figures suggest, the fertility ratio typically exceeds the crude birth rate by a factor in the neighborhood of 20 to 25: Analytically, this reflects the fact that the fertility ratio is computed from (a) a denominator about one-fifth as large as that for the crude birth rate (females aged 20-44 instead of the total population), and (b) a numerator four to five times as large. (Implicitly, birth experience over a five-year period is totaled rather than averaged, and is multiplied by a survival rate on the order of .85 to .95 to exclude those dying before the end of the period.) Thus the time patterns traced by the

Total White Population	1885-89	1905-9	1925-29
Crude birth rate, annual average	35.3	29.4	22.4
Fertility ratio, next census date	744	632	505

two measures may differ somewhat because of variations in the ratio of women aged 20-44 to the total population and in the mortality of children under 5 years, particularly in infant mortality.¹⁰

Figure 3 presents fertility ratios for the foreign-born white population from 1875-79 to 1925-29, and, supplemented by general fertility rates, for the native and total white populations for somewhat longer periods.¹¹ The observations on fertility ratios are at census and mid-census dates, but since they reflect fertility behavior over the preceding five years, we have dated them according to the quinquennia to which they refer. The lower panel shows the percentage rate of change per quinquennium in each series, computed in the same fashion as for the preceding figure.

Several points deserve mention. First, Kuznets cycles are evident in the series for both the native and foreign-born groups. Through 1925-

⁹ A good discussion of the conceptual and statistical problems relating to the fertility ratio is given in [16, p. 13 and App. A].

¹⁰ For the total white population, the only one for which comparison is possible, the directions of change in the rate of change of the crude birth rate and of the fertility ratio are identical from 1885-89 on, the principal period of the analysis, with the exception of the movement from 1905-9/1910-14 to 1910-14/1915-19. This disparity is primarily due to an understatement of the fertility ratio for 1910-14, because no adjustment was made for the exceptional effect of the influenza epidemic of 1918.

¹¹ The fertility ratio estimates, prepared in connection with the present study, are based in large part on a valuable unpublished memorandum prepared by Everett S. Lee providing age and parentage detail underlying the quinquennial estimates of native white population published by Kuznets [27]. Because of omissions or defects in the recent reporting of parentage and nativity, it was not possible to continue these estimates beyond 1925-29. However, to provide some idea of the pattern after 1925-29, use has been made of the official estimates of the closely comparable general fertility rate (live births per 1,000 females aged 15-44) for the total and native white populations.

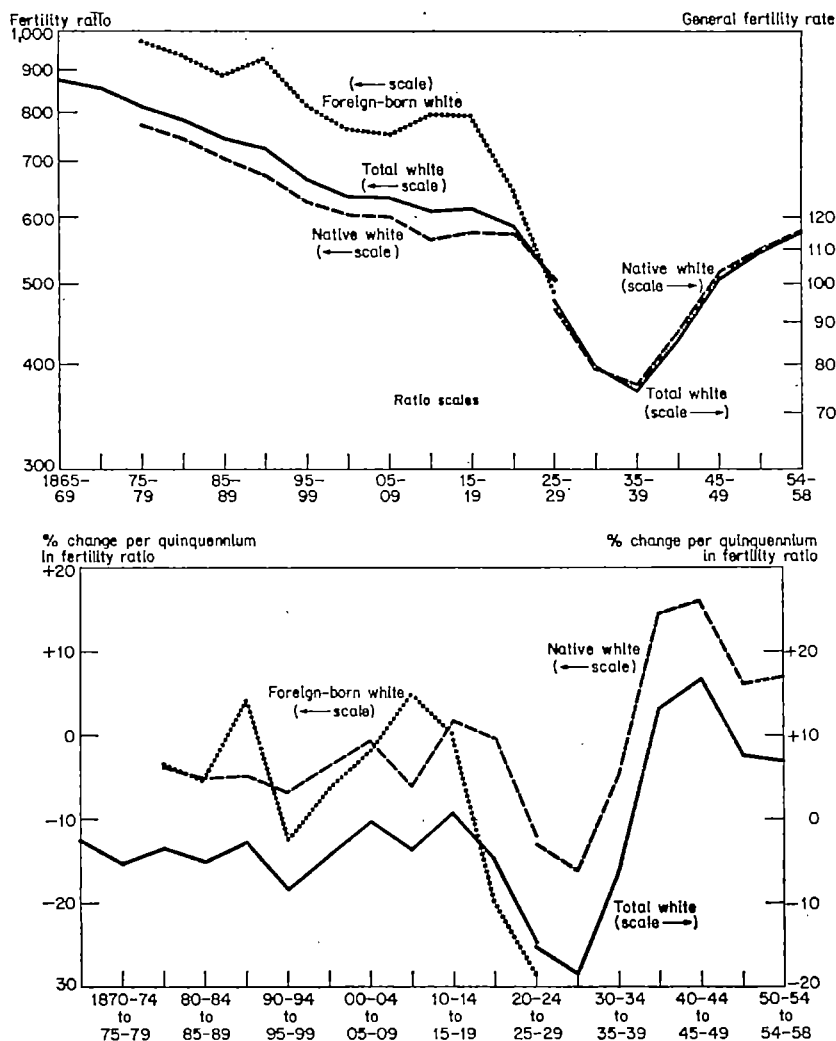


FIGURE 3. LEVEL AND RATE OF CHANGE OF FERTILITY RATIO, 1865-69/1925-29, AND OF GENERAL FERTILITY RATE, 1920-24/1954-58, TOTAL WHITE POPULATION BY NATIVITY

Source: Table A-3

29, the timing of the swings appears to be usually the same, but the amplitude is substantially greater for the foreign-born white. There is some suggestion of increasing amplitude, particularly for the native white, and in the most recent period the magnitude of the swing for this group is strikingly greater than previous ones. Arithmetic analysis of the swings in the total white group shows that they are caused in important measure by the fertility movements of both the native and

foreign-born components, and that the contribution of shifts in the relative importance of the two groups has been negligible. The native-born white group, despite the smaller amplitude of its swings, typically accounted for the dominant part of the movement in the total because of its much greater share (Table B-1).

Some light is also cast on the precipitous rate of decline in total white fertility in the 'twenties. For both the foreign- and native-born populations there is a substantial drop in the fertility ratio between the first and second halves of the decade. However, the decline for the foreign-born is more than double that for the native—29 against 12 per cent. Hence, a significant part of the decline in total white fertility in the 'twenties—to be precise, about one-third (Table B-1)—was owing to the drastic reduction in the fertility of the foreign-born white population.¹² Indeed, for this group, if one adds the movement between the two preceding quinquennia, the drop in fertility was nothing short of spectacular. Between 1915-19 and 1925-29 the foreign-born white fertility ratio dropped by about four-tenths, more than double the decline during the preceding 40 years.

D. The Fertility of the Urban and Rural Native White Populations

Our data now become even more limited, relating only to the latter half of each decade from 1885-89 on. Estimates published by the National Resources Committee [64] for 1905-9 through 1925-29 have been carried back two additional decades. A constant 5 per cent adjustment by the NRC for underenumeration of children under five years has been accepted here, in part because no basis for a differential rural-urban adjustment was readily available, and in part because the analysis rests primarily on the figures for the more reliable censuses from 1900 on. Our immediate interest is in the pattern through 1925-29, and estimates for the native white population by rural-urban residence are only available to this point. To fill out the picture since then, however, we have added overlap figures for the total white population for 1925-29 on, an approximation which seems reasonable in view of the much diminished importance of the foreign-born in recent years.

As is clear from the curve for the total native white group in Figure 4, compared with that in Figure 3, the timing of the Kuznets cycles before 1925-29 is such that omission of the observations for the first half of each decade tends to conceal the long swings. Nevertheless, some significant points stand out. As the upper panel shows, the decline from 1885-89 to 1925-29 in fertility of the total native white population was

¹² "The decrease in fertility of foreign-born white women was perhaps the outstanding feature of the decline in the birth rate during the twenties" [65, p. 127].

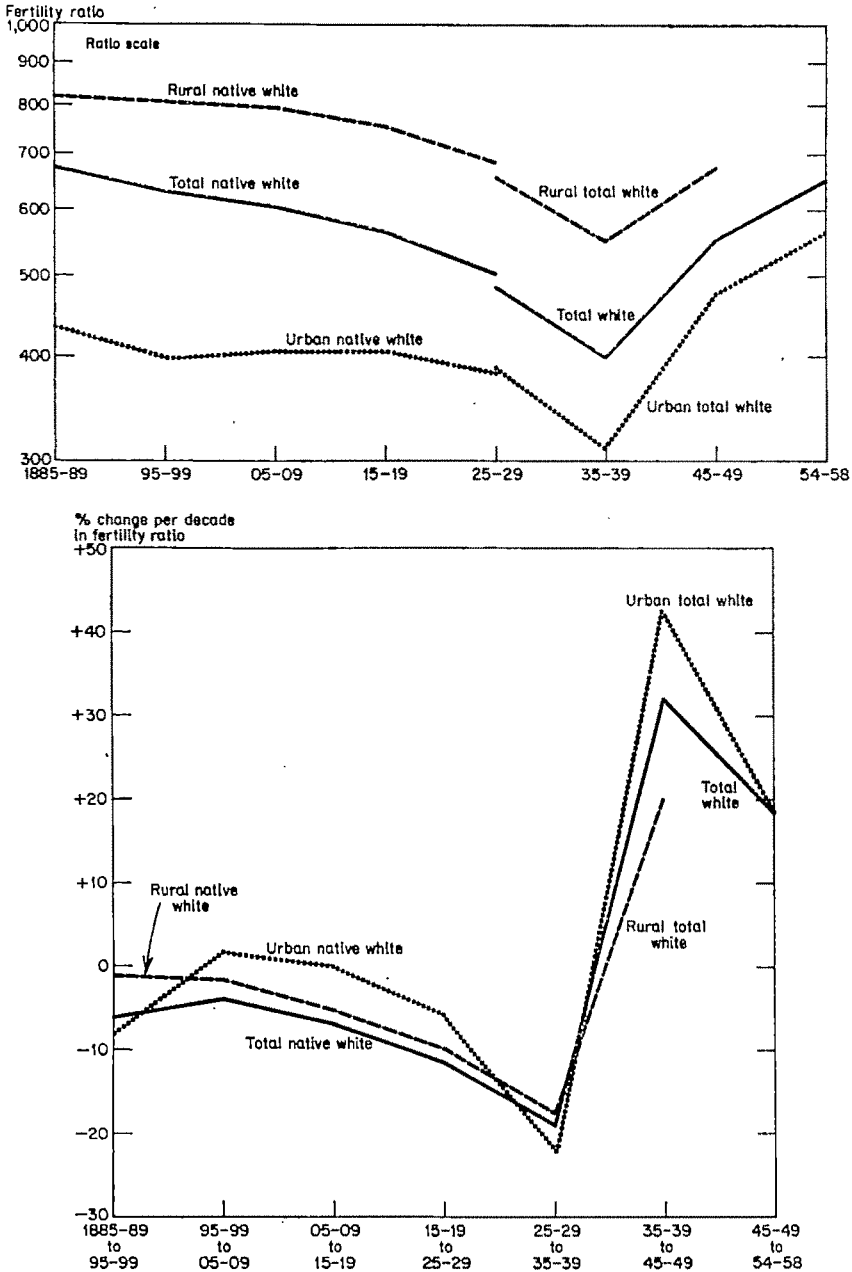


FIGURE 4. LEVEL AND RATE OF CHANGE, FERTILITY RATIO OF NATIVE WHITE POPULATION, 1885-89/1925-29, AND TOTAL WHITE POPULATION, 1925-29/1954-58, BY RURAL-URBAN RESIDENCE

Source: Table A-4

significantly greater than that for either of the components. This was caused by the depressing influence on total native white fertility of the continuous redistribution of population from high-fertility rural to low-fertility urban areas. Quantitatively this rural-urban shift accounted for about one-half of the total decline over the 40-year period (Table B-2). The depressing effect on fertility was about the same in each successive decade.

A second point of interest is the greater decline in rural than urban fertility through 1925-29. The rural decline is about half again as great as the urban—18 as opposed to 12 per cent. Indeed, if one considers the estimates for urban fertility from only 1895-99 to 1925-29, there is little evidence at all of a declining trend. The over-all reduction in these three decades is only 4 per cent, and the impression created by the curve is one of general stability.

This observation of substantial stability for a group accounting in this period for a third to a half of white females of reproductive age runs so counter to the common impression of a general and persistent secular decline that it deserves further consideration. This is particularly the case since this group has tended to assume an increasingly dominant role in determining the pattern for the total white population and thus is of central significance for consideration of recent and prospective experience of the white population as a whole.¹⁸ Could the finding be a statistical artifact, resulting from deficiencies in our estimating procedure? The possibility cannot be discounted—we have attempted to make a reasonable estimate for 1895-99, but with more time and larger resources it undoubtedly could be improved. However, even if we take only the more firmly based NRC estimates for 1905-9 through 1925-29—at the expense unfortunately of reducing our span of observation to two decades—there is still little evidence of a significant decline. In presenting these data the NRC does not call into question the figures for urban native white population, though they are accorded hardly any attention [65, p. 127]. With regard to regional fertility patterns of the *total* white population, however, the NRC does note that “these data show clearly a tendency toward the leveling off of birth rates in areas long influenced by the lower birth rate pattern” [65, p. 123].

Some additional historical evidence consistent with the finding of stability is perhaps worth citing. In 1930, Joseph J. Spengler published a study of the fertility of native- and foreign-born women in New Eng-

¹⁸ Readers may be reminded in this connection of the finding in Dorothy S. Thomas' pioneering study of Sweden [44] that during the 19th century *short term* fluctuations in fertility of the total population were initially dominated by fluctuations in agriculture, but subsequently by those in industry.

land, in which he concluded that "during the period between 1860 and 1915 no definite trend appeared in the native fertility rates" [38, p. 34]. For the period from 1915 through 1925 (the last year of the study), he found an upward tendency in fertility. Here, then, is an area in the forefront of the process of urbanization and industrialization in which native white fertility did not significantly decline over a long period stretching well back into the 19th century.¹⁴ The appearance of a similar pattern for the nation as a whole at a later date would clearly be consistent with this earlier New England experience.

One final point should be noted regarding Figure 4. The decline of total native white fertility in the 1920's is now seen to be owing more to a decrease in rural than urban fertility. Between 1915-19 and 1925-29, the reduction in rural fertility was close to 10 per cent, while that for urban fertility was under 6 per cent. Thus further understanding of this period calls particularly for an explanation of the rural decline.

E. Summary

While the fertility of the total white population declined substantially from the latter part of the 19th century to the mid-'thirties, there was significant variation in the rate of change over time and among component population groups. Even after averaging data so as to eliminate or substantially reduce variability due to the business cycle, marked fluctuations—Kuznets cycles of 15 or more years duration—stand out in the patterns for the total, native, and foreign-born white populations. Moreover, in the first three decades of this century the over-all decline in total white fertility was owing almost exclusively to declines for the foreign-born white and rural native white populations and to the shift from rural to urban areas; the fertility of the urban native white population, the group of central importance in understanding recent and prospective movements in the aggregate, remained virtually unchanged. Considerations such as these raise the question whether the baby boom, rather than an abrupt reversal in a long-term down-trend, might not be at least in part a Kuznets cycle of much larger magnitude than heretofore. To answer this, it is necessary to look into possible reasons for these movements.

II. *Reasons for Kuznets Cycles in Fertility of Different Population Groups*

Briefly stated, the analytical viewpoint underlying the subsequent discussion is this: variations in the fertility of a given population group

¹⁴ A recent re-examination by Robert Gutman [17] of the reliability of the Massachusetts birth registration data used by Spengler, while arriving at a somewhat different evaluation from Spengler, does not upset this finding.

are caused primarily by changes in two classes of factors—economic condition and demographic composition. The “group” for which these factors should be studied comprises those in the family-building ages. Broadly, this embraces those aged 15-44 years, but for some purposes particular attention should be paid to the younger members, those aged, say 20-29, where so many decisions regarding marriage and childbearing are concentrated. “Economic condition” refers to the employment and income experience of the group. Ideally, “income” here would embrace all sources, including even interpersonal transfers from other age groups, though in the following discussion attention is concentrated on the chief source, labor income. “Demographic composition” refers to the distribution of the group according to characteristics such as age, sex, nationality, and parentage. A change in demographic composition may itself stem basically from economic forces, for example, a change in age composition of the foreign-born due to a rise in immigration, but it is nevertheless useful to distinguish the different channels through which these forces operate. Both economic condition and demographic composition may affect the over-all fertility of a population group by influencing either marriage behavior, marital fertility, or both. No consistent effort is made here to distinguish the role of these two components in over-all fertility change, though it would be of interest in a fuller treatment.¹⁵

The analysis below for the foreign-born takes up only compositional factors, while those for the two native-born groups concentrate on economic condition. It would have been of interest to examine, where possible, the influence of economic factors on foreign-born fertility in so far as they exert effects other than through compositional change, and of changes in demographic composition on native-born fertility, especially those associated with rural-urban migration.¹⁶ In the present discussion, however, we have not attempted an exhaustive analysis, but have

¹⁵ This brief statement of analytical viewpoint is intended merely to highlight the determinants studied here. Among other possibly important factors are variations in the competitive situation of children in the consumers' scale of preference associated, e.g., with the introduction of new consumer durables or a change in the net income which children add to the family (see Joseph S. Davis [9, pp. 56-58] and Gary S. Becker [70, pp. 209-311]; changes in the availability of credit resources; and shifts in techniques and knowledge of birth control). Mention should also be made of a stimulating paper by Moses Abramovitz [2, pp. 158-79] which touches on some of the longer-term forces shaping contemporary attitudes toward fertility.

¹⁶ A cursory look at the available data on compositional aspects of the native white rural and urban populations suggests that they exhibit much less decade-to-decade variability than the foreign-born white. See the 1890-1930 figures in Thompson and Whelpton [45, Tables 41 and 56, and App. Tables 17, 23, and 27]. While there are some excellent recent general studies on U.S. population [6] [41], it is unfortunate that there is nothing that continues this remarkable study to the present in its full analytical depth.

singled out those factors which seemed on the basis of our initial investigation to throw significant light on the Kuznets cycles shown by each group.

A. Foreign-Born White Fertility

As populations go, the foreign-born is an unusual one—primarily because the source of its growth is immigration rather than births.¹⁷ One result of this is a very atypical age distribution. Unlike the usual age distribution of a growing population, where the numbers tend to fall progressively with each older age group, that of the foreign-born shows a concentration in the middle age groups with relatively small numbers at the extremes, at least as long as immigration remains high [45, p. 144]. Moreover, not only are the additions to this population fed in at relatively advanced ages—the “prime” working ages—but there is a significant disproportion between the sexes, with males noticeably predominating. Finally, given wide swings in immigration, such as have occurred in this country, the relative size even of adjoining age-sex groups can fluctuate widely in as short a period as a decade.

These considerations explain our starting with demographic composition in seeking clues to the variations in the rate of change of foreign-born fertility. Our immediate point of departure in studying these movements, particularly the very steep decline in the 1920's was the observation that the proportion of young foreign-born women who were married dropped sharply from 1920 to 1930, as is shown by the following figures:

Age at Specified Date	Per Cent Married	
	1920	1930
20-24	61.6	47.5
25-29	81.6	75.9

Why, one may ask, should such an abrupt decline occur? The chance of a foreign-born white woman aged 20-24 by 1920 being married was almost two in three, but if she reached this age group only one decade later, the likelihood had declined to less than one in two.

An obvious hypothesis, stemming from the observation that the marriage proportion for young foreign-born *men* remained almost constant over the decade, is that the demand for women to marry dropped off

¹⁷ Children born to foreign-born women after immigration are, of course, classified as native-born.

because of a decline in the relative number of males in the market [25] [46]. In testing this, however, one must recognize that the relevant ratio is not that of males to females in a given age group, the standard sex ratio, since, as is well known, men typically marry at a later age than women. For example, in the period 1890-1930, at least 45 per cent of foreign-born white women were married by the time they were 20-24, but for foreign-born white men this proportion was not attained until ages 25-29 had been reached [45, p. 395]. In attempting to explain the marriage proportion for foreign-born white women aged 20-29, therefore, the ratio of foreign-born white males aged 25-34 to females aged 20-29 was computed.¹⁸

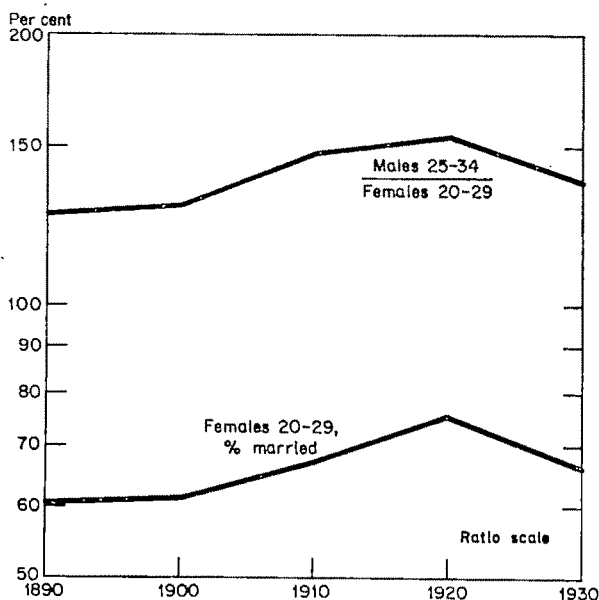


FIGURE 5. FOREIGN-BORN WHITE POPULATION, RATIO OF MALES AGED 25-34 TO FEMALES AGED 20-29, AND PER CENT OF LATTER MARRIED, 1890-1930

Source: Table A-5

The relevant series are plotted in Figure 5 for the decennial census dates 1890-1930. The close similarity between the patterns traced by the two curves—a similarity which would not appear if the standard sex ratio for those aged 20-29 were used—is impressive. Apparently, the marital experience of young foreign-born white females did depend

¹⁸ The analysis implies of course that native-born men did not constitute a particularly important source of demand for foreign-born women. This assumption seems consistent with the facts; in 1920 the proportion of foreign-born mothers whose husbands were native-born was less than one in six [56, p. 232].

very considerably on the gyrations of our rather unorthodox sex ratio, which in turn arose from the impact of both earlier and current immigration on the age-sex structure of the foreign-born population.¹⁹

In Figure 6, this line of reasoning is pushed a step further. Here, at five-year intervals, the series for foreign-born white fertility and our marriage-relevant sex ratio (the two solid lines) are compared, the latter being used in the absence of direct observations on the marriage proportion at mid-census dates. As the lower panel shows, while the movements in the rates of change of the two series are not perfectly consistent, there is a noticeable similarity. Both series show two trough-to-trough swings with the dates of peaks and troughs close, if not identical. This suggests that at least one element responsible for Kuznets cycles in the rate of change of foreign-born fertility was the changing proportion of males aged 25-34 to females aged 20-29 and the consequent effect of this on the marriage proportion.

The broken line in the figure brings out a second demographic feature of the foreign-born population that may have contributed to the fertility swings, namely, the proportion of women aged 20-44 in prime reproductive ages, conceived here as encompassing ages 20-34. Here too there is a suggestion of two trough-to-trough swings with reasonably consistent timing, though the amplitude of the movements is somewhat smaller for this series. However, in the beginning of the period (for which the estimates are probably less reliable), the timing relationships are somewhat off.

This brief discussion of Kuznets cycles in the rate of change of foreign-born white fertility is designed to be exploratory rather than definitive, and enough has perhaps been said to provide some support for the view that shifts in demographic composition of the foreign-born associated with the changing impact of immigration were at least in part responsible for these movements. Even if one accepts this suggestion, however, there remain some troublesome discrepancies. One—of particular interest in the present analysis—is that in the latter part of the period considered here, the decline in the rate of change of fertility was somewhat greater than one would have expected on the basis of the two factors so far discussed. One possible explanation, suggested in several sources, and consistent with the emphasis here on compositional changes in the population, is an abrupt decline in the proportion of foreign-born women in the prime reproductive ages who came from the high-fertility countries of southern and eastern Europe. There is

¹⁹ An interesting by-product of the sharp decline in the marriage-relevant sex ratio during the 'twenties, and the corresponding reduction in the proportion of foreign-born white females aged 20-24 who were married, was an abrupt rise in the labor-force participation of this group from 37.6 to 50.1 per cent [33, Table A-4].

substantial evidence that female immigrants from this area typically had significantly higher fertility than contemporaneous immigrants from northern and western Europe [57, pp. 4, 10] [69] [16, p. 108]. Clearly, a sudden drop in the share of young foreign-born women from this source would tend to depress fertility.

Direct evidence to test this proposition is not available since, during the period with which we are concerned, the census did not regularly publish age detail for the foreign-born by country of origin. However, it seems possible to form a rough impression of the validity of the argument. In the period 1890-1915, about two-thirds of all female immigrants came from southern and eastern Europe; in 1915-30, about one-third. We have attempted to estimate, therefore, for foreign-born women aged 20-34 at each of several dates, the proportion who had immigrated between 1890 and 1915, the peak period of the "new immigration."²⁰ The results are as follows: 1900 = 45, 1910 = 82, 1920 = 86, 1930 = 48. The figures clearly suggest a drastic decline during the 'twenties in the share of young foreign-born women accounted for by the new immigration,²¹ and thus appear consistent with the suggestion that the decline in the rate of change of foreign-born fertility during this decade, attributable in part to the demographic shifts previously noted, was aggravated by this factor.

B. *Rural White Fertility*

The explanation investigated here for Kuznets cycles in rural fertility is a simple one; namely, that the rate of change of rural fertility varies directly with that in the economic condition of the farm population in family-building ages, approximated here by real farm income per head of the farm population (or labor force) as a whole. If the rate of growth of real farm income per head drops off, the rate of change of farm fertility would be expected to decline (algebraically). The converse is true if the rate of farm income growth increases.

The analysis comprises two parts, one for 1885-89 through 1925-29 based on observations at decennial intervals; and one, employing averages at quinquennial intervals, for 1920-24 through 1954-58. In

²⁰ The technique for 1930, for example, was to compare the number of survivors from the group of foreign-born women aged 5-19 in 1915, estimated by appropriate survival rates from [31, p. 23], with the number aged 20-34 enumerated in 1930.

²¹ Thompson and Whelpton draw an opposite conclusion, namely, that the share accounted for by the new immigration rose slightly during the decade and thus could not have contributed to the fertility decline [45, pp. 271-72]. The procedure they use to infer the share of the new immigration, however, rests primarily on figures for foreign-born women of all ages, and fails to take account of the fact that the major shift in national origins of immigration in the 'twenties particularly affected the younger foreign-born age groups, those central to the explanation of fertility.

the first part of the analysis, we use fertility data for the total rural white rather than native rural white population, since the earlier estimates for the former are probably somewhat more reliable for the present purpose and the bias introduced by the inclusion of the relatively unimportant foreign-born group in the rural total is probably fairly small. This series is compared with five-year averages of real gross farm income per person engaged in farming. The dates chosen for the latter allow for a lead of one to one and a half years over the fertility series. In the second part of the analysis, annual estimates of the birth rate for the total farm population (white plus nonwhite), converted to five-year averages for the first and second half of each decade, are compared with real net farm income per head of farm population, again with allowance for a lead of the former over the latter.²² Both the quinquennial and decennial farm income series are deflated by an index chosen to approximate the cost of living to farmers. The series are plotted in the upper panel of Figure 7, and the percentage change, our particular interest, in the lower.

By and large, as the lower panel shows, the data seem reasonably consistent with the hypothesis—at least as consistent as one might hope given the shortcomings of the data and the inevitable limitations of any monocausal explanation. Swings in the rate of growth of real farm income per head or per worker appear to be matched fairly closely by swings in the rate of growth of rural fertility. Reference to the adjoining scales will show that the magnitude of the income swings is substantially greater than that of fertility. This might be interpreted as suggesting an elasticity noticeably under one, a result which seems consistent with the findings of similar business cycle analyses.²³

If this reasoning is accepted, then the historical course of rural fertility change in this century would be conceived as reflecting in significant measure the pattern of major surge and relapse which has characterized farm income growth. The accelerated rate of decline of farm fertility in the 'twenties and early 'thirties would be attributed to the drastic setback to the growth of farm income in the period following the First World War, a decline so great that the absolute level itself was substantially reduced. The subsequent baby boom in rural areas would be explained by the corresponding resurgence in farm income growth in the late 'thirties and 'forties associated particularly with the war and postwar booms. And finally, the decline in the rate

²² The shift to the farm birth rate series is due in part to statistical convenience, but more fundamentally to the fact that the connection between "rural" fertility and farm income becomes progressively more tenuous as the rural nonfarm population grows.

²³ Cf. the studies of Gary S. Becker [70, pp. 209-31], Dorothy S. Thomas [15] [43], Dudley Kirk [70, pp. 241-57] [48, pp. 84-85].

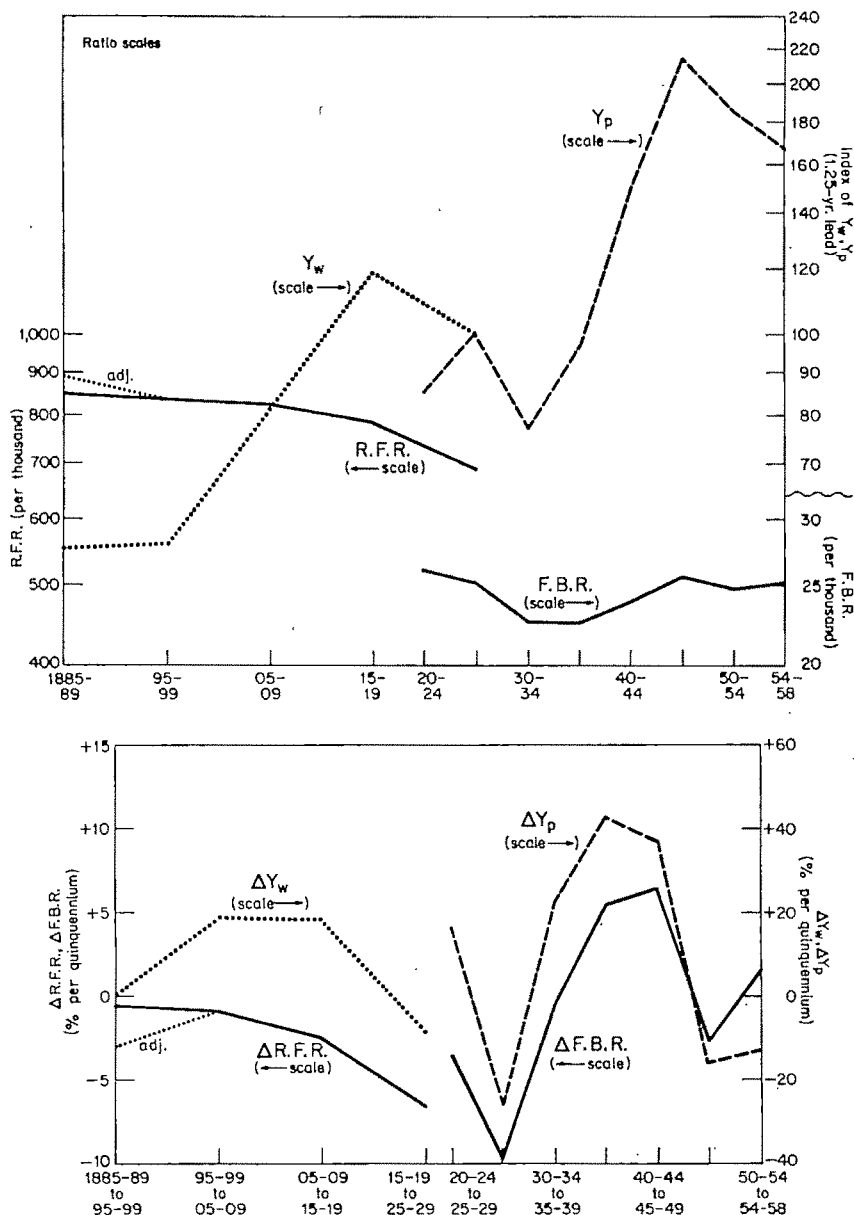


FIGURE 7. LEVEL AND RATE OF CHANGE OF RURAL WHITE FERTILITY RATIO (R.F.R.) AND REAL GROSS FARM INCOME PER ENGAGED (Y_w), 1885-89/1925-29, AND OF FARM BIRTH RATE (F.B.R.) AND REAL NET FARM INCOME PER HEAD (Y_p), 1920-24/1954-58

Source: Tables A-7a and A-7b.

of growth of fertility in the 1950's, which in terms of absolute level meant a leveling off, would be explained by the tapering off of the farm boom and substantial drop in farm-income growth. The data suggest that the adverse effect on fertility in this most recent period has been somewhat less than might have been expected. A number of possible reasons for this come to mind, such as compositional changes, the increased significance of nonfarm sources in the total income of farm families [40, pp. 48-49], and the progressive rise in the proportion of the "farm" population (1950 census definition) not engaged in agriculture [61]; but it is not possible to pursue these questions here.

From what has been said, it should be clear that the fertility trend for the *total* white population has been subject to substantial variation as a result of major fluctuations in the fertility of the foreign-born and rural white components. The fluctuations for these groups in turn appear to have been caused by the impact of the rise and fall of immigration on the age, sex, and nationality composition of the foreign-born, and of major swings in agricultural conditions on the economic condition of the farm population. It would seem to follow that generalizations based on the fertility record of the total white population (or of the entire population, whose behavior is of course dominated by the total white) would be extremely hazardous.

Consider, for example, the experience of the 1920's. If the foregoing analysis is correct, the striking decline in total white fertility that occurred in this decade was caused largely by the conjuncture of two exceptional circumstances—namely, major shifts in the demographic composition of the foreign-born population arising from the effect on immigration of the First World War and the subsequent imposition of restrictions, and, second, a major slump in agricultural conditions. When added to the continuous depressing influence of the rural-urban shift, these circumstances created a decline in white fertility noticeably out of line with previous experience. Knowing this, one is inclined to view with some reserve statements such as that quoted previously, which cites the sharp fertility decline for the *total* population in the prosperous 1920's as a reason for discounting the effect of economic conditions on fertility.

It is nevertheless true that even urban native white fertility declined in this decade, though the decline of under 6 per cent for this group is rather less impressive than the almost 20 per cent decline for the white population as a whole. It is time, therefore, to see what might explain the fertility pattern for this group.

C. Urban Native White Fertility

As in the rural analysis, the aim here is to explore the relation between Kuznets cycles in fertility and in the economic condition of the

population of family-building ages. For the rural population, it seemed reasonable to assume that the economic experience of those in family-building ages could be inferred from the income experience of the farm population as a whole. Such an assumption, however, does not seem plausible for the urban group, with its much more varied distribution of industrial and occupational attachments. In the absence of direct information on the situation of those in family-building ages, therefore, we have attempted to infer the state of the labor market for young persons from two indicators, conceived as reflecting respectively the demand and supply sides of the market. The first is the unemployment rate for the labor force as a whole. A low rate is taken as reflecting a generally favorable state of demand for labor, young and old; a high rate, an unfavorable situation. The second is the rate of change of the total white male population, aged 20-29, taken as a crude index of the rate of entry of young persons into the labor market. Other things equal, a decrease in the rate of entry would make for a favorable labor market for young persons because of their scarcity; an increase, an unfavorable market. Thus the hypothesis is that the rate of change of urban native white fertility varies directly with that of aggregate labor demand (read "inverted unemployment rate") and inversely with that of the rate of labor market entry of young persons (read "rate of change of white male population, aged 20-29").²⁴

An example may clarify the reasoning. If the economy is experiencing a Kuznets-cycle expansion, the rate of growth of labor demand would increase, and, other things remaining unchanged, one would expect this to lead, through its effect on income and employment conditions, to a favorable response in fertility of the native population by encouraging marriage and childbearing. However, under conditions of free immigration, the increased rate of growth of labor demand would also provoke an influx of immigrants. The resulting rise in the rate of additions to the labor market would tend to counteract the tendency toward tightening and thus offset in some measure the stimulus to fertility of the native-born. Note, in this connection, that immigrants are typically concentrated in exactly those age groups in which we are interested for the analysis of fertility. Conversely the tendency toward an adverse impact on native-born fertility of a decreased rate of growth

²⁴ Although the view that variations in the general unemployment rate primarily reflect changes in aggregate demand seems most consistent with formal theory, it is not essential to the analysis. Alternatively, one might think of movements in the general unemployment rate as indicating the average course of employment conditions, and the net outcome of aggregate demand and supply, and changes in the rate of entry as indicating variations in the deviation from the average of the situation for young persons. However, the fact that for most of the period covered here a rise in the rate of entry accompanied a reduction in unemployment seems consistent with the emphasis on aggregate demand (Table A-8, cols. 2, 3).

of labor demand during a Kuznets-cycle contraction would be moderated by a decrease in the rate of immigration. Thus Kuznets cycles in the rate of change of labor demand would tend to be compensated by swings in the rate of entry into the labor market owing to immigration, and the consequent impact on native-born fertility would be counteracted in some degree.²⁵

Figure 8 presents the relevant series; as before, the upper panel shows the levels of the variables, the lower, their rates of change. To facilitate inferences from the graph, the curve for each of the explanatory variables has been plotted inverted so that an upward movement would be expected to cause an upward movement in the fertility curve, other things remaining unchanged.

If we first consider variations in the decade rates of change through 1935-39, the most interesting feature is the inverse movements of the two explanatory series. As the lower panel shows, whenever the rate of growth of aggregate labor demand (the lower solid line) moves in a way favorable to fertility, the change in the rate of entry of young persons into the labor market (the broken line) moves adversely, and vice versa. In the early part of the period the swing in supply conditions reflects chiefly movements in immigration—exactly the situation described in the example above. Later, the supply movement reflects primarily variations arising from demographic sources. For example, the increase in the decade 1915-19/1925-29 over the preceding decade reflects an exceptional rise in the rate of increase of native white males aged 20-29, which traces in turn to a corresponding movement in the total white birth rate earlier in the century.

So far as directions of movement of the explanatory series during this period are concerned, therefore, they carry no clear implication regarding the expected behavior of the rate of change of fertility—a plus in one is accompanied by a minus in the other. And, indeed, the fertility curve fails to exhibit the fluctuations of either of the two explanatory series. Rather, one finds simply one extended swing from the beginning of the period through 1925-29/1935-39. The 'twenties, with a relatively small decline in the rate of change of fertility, form a consistent part of this picture, a favorable movement in demand conditions being offset by an adverse one in supply. Interestingly, if one were to smooth out fluctuations in the two explanatory curves by, say, a simple two-item moving average, both, and particularly the unemployment rate, would show an extended swing rather similar to that of

²⁵ Some may note a similarity between this reasoning and Francis Walker's analysis emphasizing the adverse influence of immigration on the fertility of the native population [71] [72]. Walker, however, was concerned with the primary trend, whereas the present analysis refers only to Kuznets cycles, and in addition takes account of the stimulating influence to native fertility of the very conditions which encourage a rise in immigration.

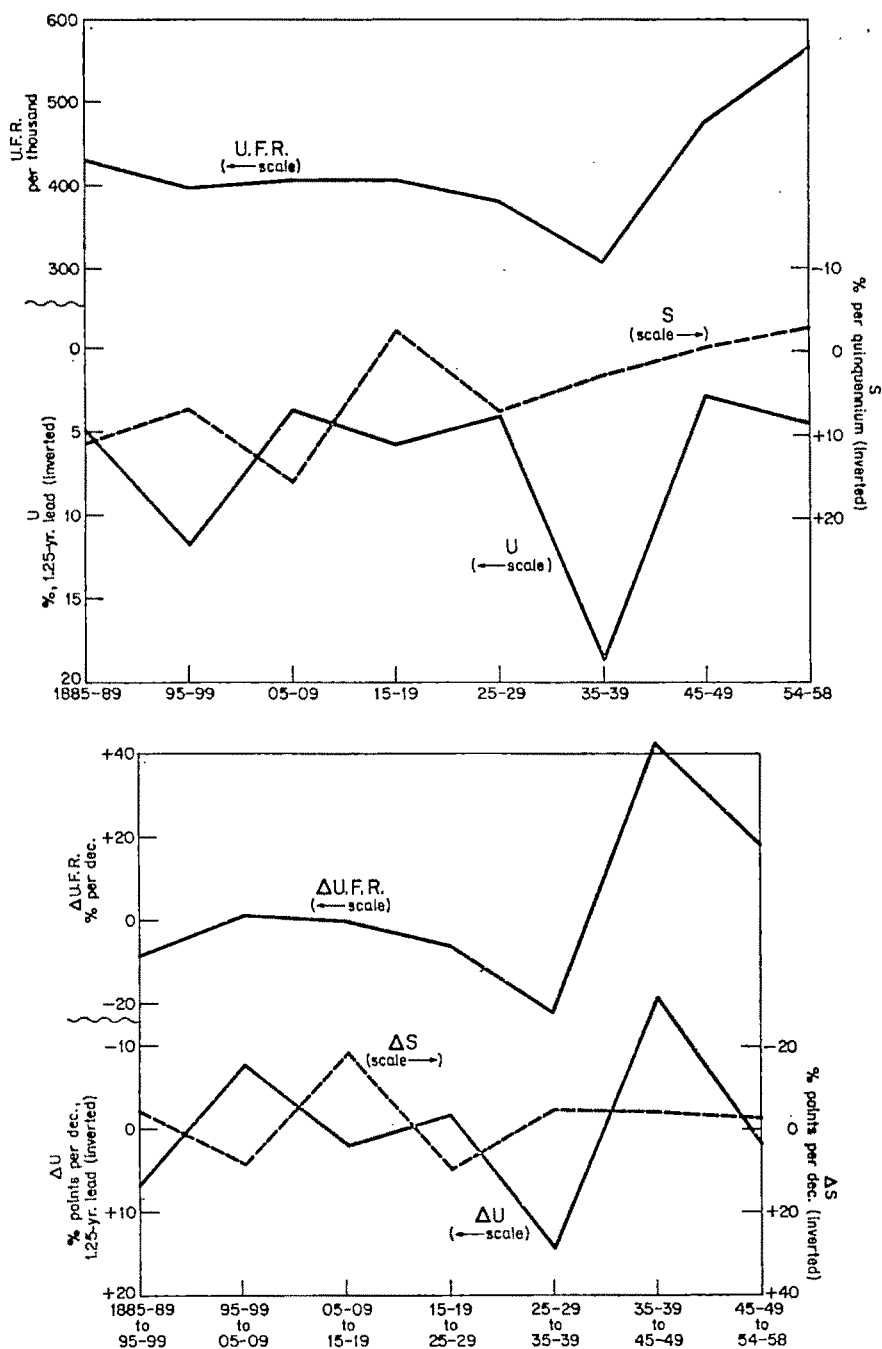


FIGURE 8. LEVEL AND RATE OF CHANGE OF URBAN NATIVE WHITE FERTILITY RATIO (U.F.R.),* UNEMPLOYMENT RATE OF CIVILIAN LABOR FORCE (U), AND RATE OF CHANGE OF TOTAL WHITE MALE POPULATION 20-29 (S), 1885-89/1954-58

Source: Table A-8

* Total white, 1925-29.

the fertility curve. An average of the two explanatory curves would produce the same effect.

Still more intriguing is the behavior of the three series after 1935-39. In this period, the rate of change of labor demand continues its pattern of rise and fall, with a swing of noticeably greater amplitude than previously. In striking contrast to the preceding pattern, however, the change in the rate of entry into the labor market levels off instead of fluctuating inversely. And, for the first time, the rate of change of fertility exhibits a Kuznets-cycle movement, reproducing with remarkable similarity the fluctuation in the rate of change of labor demand. The inference suggested by these movements seems clear. With immigration restricted and without a surge in the rate of labor market entry from the native-born population caused by demographic processes, the favorable impact of a swing in the rate of growth of demand—itsself much larger than heretofore—was felt with much greater force by the young native whites in the labor market. As a result, the rate of change

TABLE 2—OBSERVATIONS ON PERCENTAGE RATE OF CHANGE PER DECADE IN URBAN NATIVE WHITE FERTILITY CLASSIFIED BY CONCURRENT CHANGE PER DECADE IN PERCENTAGE OF LABOR FORCE UNEMPLOYED AND IN PERCENTAGE RATE OF CHANGE OF TOTAL WHITE MALES, AGED 20-29, 1885-89/1954-58

Change per Decade in Percentage Rate of Change of Total White Males, Aged 20-29 (percentage points)	Change per Decade in Percentage Unemployed (percentage points)				
	-16	-8	-2 to +2	+7	+14
+8 to +10			-6		
-2 to -5	+42	+2	+18	-8	-22
-18			0		

Source: Table A-8.

of fertility of this group reproduced the swing in labor demand in significant measure for the first time.

If one considers magnitudes of the variables rather than simply rates of change, the argument seems reasonably well borne out, though the correlation is not perfect. In Table 2, each of the seven observations on the rate of change in fertility is classified according to the accompanying values of the rate of change in the unemployment rate and in the percentage change in white males aged 20-29. One finds that, holding the change in rate of entry into the labor market constant (that is, examining each row in the table separately), the rate of change of fertility varies directly with the rate of change in demand (inversely with the rate of change in the unemployment rate). Conversely, holding demand conditions constant (examining each column separately), there is a tendency for the rate of change of fertility to vary inversely

with the change in the rate of entry into the labor market, though in this case there is one inconsistency (the +18 and 0 entries being out of order vertically). Whether this discrepancy primarily reflects a fundamental deficiency in the analytical scheme or an inadequate approximation to the economic condition of those of family-building age provided by the explanatory series used here, it is not possible to say.

A comprehensive measure of the income and employment experience of young persons for the period covered here remains tantalizingly out of reach. Yet such additional evidence as we have been able to assemble supports the view that the income experience and labor market situation of young persons were exceptionally favorable in recent years. Consider the following:²⁶

1. In the 'forties, earnings in the lower-income occupations rose much more rapidly than those in the higher, and then, in the 'fifties, at about the same or a slightly lower rate [51, No. 33 (Jan. 15, 1960), pp. 6-7, and No. 35 (Jan. 5, 1961), p. 52]. Since young people are more highly concentrated in lower-income occupations than older, they must have particularly benefited from the movement of the 'forties. The very fragmentary evidence available suggests no corresponding development in the 'twenties.

2. The shift of young persons into higher earning occupations proceeded at a much higher rate in the 'forties than in the two preceding decades. In 1940, 17 per cent of males aged 15-24 in nonfarm occupations were in the three highest income classes (professional, technical, and kindred workers; managers, officials, and proprietors, except farm; and craftsmen, foremen, and kindred workers). By 1950, 41 per cent of this same group of males (now aged 25-34) were in these classes, an improvement of 24 percentage points. From 1920 to 1930, the improvement for the cohort moving through the same ages was 17 points, and from 1930 to 1940 it was 12 points. Corresponding figures for the cohorts aging 25-34 to 35-44 in the three successive decades are 7, 4, and 14 points. Other things being equal, this more rapid shift to higher-income occupations points to a significantly higher rate of income growth for young persons in the 'forties than in the two preceding decades.²⁷

²⁶ In the examples cited, the typical movement from the 'thirties through the 'fifties is consistent with the pattern shown by the rate of change of fertility—that is, the abrupt break with past experience, in a direction reflecting a particularly favorable situation for young persons, occurs between the 'thirties and the 'forties. The movement from the 'forties to the 'fifties suggests a slowing or even reversal of the process. It is likely that between the first and second halves of the 'fifties this pattern would be still more apparent.

²⁷ The figures for 1930-50 are computed from [22, Appendix Table 1]; for 1920, from unpublished estimates comparable to [22] kindly provided by W. Lee Hansen. Data for armed forces as reported in the census were included with the 1940 and 1950 figures. I am indebted to Adrian Throop for assistance in assembling these figures.

3. Expansion of government transfer payments provided a new bulwark to income in the 'forties and 'fifties, especially in the form of veterans benefits and unemployment compensation for younger persons.

4. Labor-force participation rates in the 'forties showed a marked break with previous trends in a manner strongly suggesting a shortage of young workers. The sharp downtrend in participation of white males aged 14-19 which had prevailed since 1900 was completely reversed. A similar movement appears even to have characterized those aged 10-13 [31, pp. 364-67]. The long-term rise in labor-force participation of older women was greatly accelerated because jobs that would ordinarily have been filled by young persons were left open. And while, for young women as a whole, labor-force participation declined slightly as a larger proportion married and had children, the rates for wives, even those with preschool-age children, rose substantially. Finally, while it is not possible to cite figures on the long-term trend, part-time employment rose substantially after 1940, and it seems likely that this too stemmed at least in part from a shortage of young workers. In the 'fifties the rise in labor-force participation of older women continued virtually unabated, but the rate for those aged 14-19 resumed its long-term decline.²⁸

5. Since 1940, home ownership among young persons has risen to levels markedly higher than had previously prevailed. The following figures for nonfarm household heads show, for each age group, the percentage of dwelling units which were owner-occupied at each date:²⁹

<i>Age</i>	<i>1890</i>	<i>1900</i>	<i>1930</i>	<i>1940</i>	<i>1949</i>	<i>1959</i>
15-24	14	10	11	12	21	16
25-34	24	21	26	22	35	42
35-44	35	34	44	37	53	63

There is a marked advance in the situation of young persons after 1940, part of which must be due not only to a great increase in credit availability but to a substantially improved income position as well which encouraged taking on long-term commitments.

²⁸ The evidence cited in this paragraph is from the excellent census monograph by Gertrude Bancroft [5, pp. 29-31, 58, 77-82, and Ch. 4]. Further analysis of some of these developments is planned as part of a study by the present writer on long swings in American labor-force growth [12].

²⁹ The data through 1940 are from the census reports; for 1949 and 1959, from [21], p. 1107, Suppl. Table 1]. (Data for those aged 18-24 from the latter source were adjusted to 15-24 on the assumption that no heads of households under 18 own their own homes.) The 1930 and 1940 estimates are for male heads of household only, which biases them slightly upward compared to the figures for the other dates. The assistance of S. R. Lewis, Jr., in the preparation of these data is gratefully acknowledged.

6. Finally, there are the characteristics of the baby boom itself. A recent study [16] has shown that a major factor in the boom has been the significant decline since 1940 in age at marriage. From 1890 to 1940, age at marriage drifted irregularly downward, the decline in the median for all females amounting to only one-half year. In the next decade, a period one-fifth as long, the reduction was twice as great [55, Series A-229]. In addition, wives have had children much sooner after marriage. These two factors, earlier marriage and earlier childbearing, rather than mothers having substantially more children, accounted for most of the rise in the fertility rate through 1954 [16, pp. 365-71].³⁰ The central role of young families in the baby boom is obvious. It would be difficult indeed to account for this unless their income and employment experience had been exceptionally good.

III. *Conclusions and Possible Implications*

The most striking feature of the baby boom—and thus the one calling most urgently for explanation—is the apparent abrupt break with historical experience. However, reconciliation of present and past becomes easier when one recognizes that even before the 'forties the historical record was characterized by fluctuations of significant magnitude and duration, and that the record for the total white population is a composite of the varying experience of several component groups, subject in part to quite different influences. Major swings in agricultural conditions, on the one hand, and Kuznets cycles in nonagricultural activity with accompanying immigration fluctuations, on the other—each with their peculiar historical timing—gave rise to distinctive fertility responses on the part of the rural white, foreign-born white, and urban native white populations. When one unravels these differing strands of experience and considers their underlying influences, the impression emerges that the recent fertility behavior of the urban native white population, the group of central significance for explanation of the baby boom, is not as inconsistent with its earlier character as was heretofore believed. In the first three decades of the

³⁰ The draft law policy of deferring fathers doubtless encouraged earlier marriage and childbearing, but without an income situation that favored expansion of the family beyond the first child, it is doubtful that it could have produced a baby boom of the type experienced.

There is now reliable evidence that the average number of children per mother has also risen in the postwar period. This development is of course consistent with the analysis presented here. The longer the exceptional labor market situation prevails, the more likely the fertility response will take this form in addition to earlier marriage and earlier childbearing.

century, the fertility of this group, instead of exhibiting a declining trend, showed reasonable stability. And in the recent period the effect on the labor market of a Kuznets-cycle expansion—an expansion stronger, according to our data, than any preceding ones considered here—was for the first time not accompanied by an offsetting rise in the rate of labor-market entry due to a significant increase in either immigration or the native-born population in young working ages. The unprecedented concurrence of these three circumstances—a Kuznets-cycle expansion in the economy, restricted immigration, and a low rate of labor-force entry from the native population resulting from demographic processes—created an exceptional job market for those in family-building ages and as a result drastically accelerated the founding of families.⁸¹ This process was further abetted by a concurrent boom in agricultural conditions, which evoked a similar fertility response on the part of the rural white population.

In conclusion, some of the implications of the preceding analysis for the past and future may be set forth, as long as it is recognized that these remarks are largely speculative and offered primarily in the hope of stimulating further inquiry.

With regard to the past, it was noted earlier in the discussion that while Kuznets cycles in the rate of population growth are not a new

⁸¹ With regard to the causes of the exceptional labor market for young persons in the 'forties and 'fifties, W. Lee Hansen has brought to the writer's attention that the present paper emphasizes quantitative scarcity to the exclusion of relative quality. The following figures on median school years completed by young and middle-aged males at various dates may partially right the balance:

Age at Specified Date	1920	1930	1940	1950	1960	1970 (projected)
(1) 25-29	8.4	8.7	10.1	12.0	12.3	12.5
(2) 45-54	8.1	8.2	8.4	8.7	10.0	12.0
(3) (1)-(2)	0.3	0.5	1.7	3.3	2.3	0.5

Note the immense gain in the educational advantage of young over middle-aged workers in the 'forties, a change which sharply improved their competitive position at just the time that labor demand was booming. The timing is fortuitous, stemming from the abrupt advance in the diffusion of high-school education that occurred in the 'twenties and especially the 'thirties. (The figures are from [50, pp. 236, 238] and [52, pp. 6-7]. The 1920 and 1930 values were assumed the same as those reported by the corresponding cohorts in 1940, the first time that data on educational attainment were collected.)

The sequence of change in the educational differentials calls to mind the recent pronounced convergence in income distribution by size. One wonders to what extent the change in the size distribution in the past forty years may reflect changing income differentials by age associated with variations in both the relative number and quality of young workers.

phenomenon in our history, the shift in the source of these movements from immigration to fertility raises a question whether the recent cycle bears any logical connection to its predecessors. The implication of the present analysis is that indeed such a connection does exist. As long as we permitted free immigration, the rise and fall of immigration in response to swings in labor demand associated with Kuznets cycles in this country acted as a buffer to moderate the impact on the urban native white population. With the restriction of immigration, however, the urban native white population felt the impact of a Kuznets-cycle swing in labor demand with unprecedented force, and the result was an unparalleled response in fertility and thus again in the rate of population growth.

As for prediction of the shorter-term future, say, the decade of the 'sixties, the principal lesson of the analysis is the need for a detailed comparative study of the recent and prospective labor-market experience of those in family-building ages. The indirect indicators used here for inferring the labor-market conditions encountered by the young urban white population, so far as they are relevant, suggest one striking contrast with the recent past. The change in the rate of entry into the labor market (as gauged by predictions for the total male population aged 20-29), which has held remarkably steady in recent decades, will rise abruptly in a way unfavorable to continuation of the present rate of change of fertility, reflecting of course the upturn in the birth rate some twenty years ago. Indeed the prospective rise is unprecedented in the seven decades of experience covered here. Assuming no significant alteration in the rate of change of the unemployment rate—in other words, continuation of a reasonably high-level employment situation—a relative weakening in the exceptional labor market condition enjoyed by young persons in the recent past is implied, and a consequent adverse response in the fertility rate (though not necessarily in the *number* of births).³²

The historical analogue which suggests itself is the movement from 1915-19 to 1925-29, when with little change in the percentage unemployed a rise in the rate of labor market entry from around -2 to +8 per cent was accompanied by a fertility decline of 6 per cent (App. Table A-8). In the prospective situation, the rise in the rate of entry will be from around -2 to +20 per cent. However, a potentially significant offsetting compositional change will be the abrupt rise in the proportion of women of reproductive age in the more fertile ages, 20-29. After a fairly steady downward drift over the past half-century,

³² As the preceding footnote shows, the educational advantage of young over older workers will also change sharply in the 1960's in a direction unfavorable to continuation of the exceptional situation of the young.

this proportion (as projected for all classes of the population) will rise from a low or around 38 per cent in 1960 to about 50 per cent by 1975 [53, No. 187 (Nov. 10, 1958)]. To a significant extent, this change is of course the female counterpart of the rise in the rate of labor-market entry for males.

It is quite possible that our indicators may be inadequate for inferring the prospective labor-market experience of young persons; or conceivably there may be new compensating factors, such as a shift in composition of labor demand especially favorable to the young or a general acceleration in the rate of growth of the economy. Since 1957 there has been a slight decline in the fertility level, but it is as yet uncertain whether this may only be temporary [68, pp. 2-3]. In any event a detailed study of the labor market for young persons, past and prospective, is clearly needed.

The implications of the present analysis for the longer-term future of fertility change are in contrast with that likely to be suggested by the typical demographic discussion of our fertility history. Assuming a possible reduction in fertility in the 'sixties, the customary emphasis of demographers on the long-term secular decline in the past would suggest a view of this as a resumption of the primary trend.³³ The interpretation suggested by the present analysis, however, would be that for the group whose experience is of central significance for the future, the urban native white population, the nature of the primary trend in this century—whether upward or downward—is not readily apparent, and conceivably the recent behavior of this group may be explained at least in part in terms of the Kuznets-cycle conception of time-series change. If this is correct, and assuming continuation into the longer-term future of a reasonably high-level-employment economy, one might imagine a more or less self-generating mechanism, by which in one period a decline in the rate of labor-market entry causes a concurrent rise in the rate of change of fertility, and this in turn leads, with a lag of around two decades, to a rise in the rate of labor-market entry and a consequent decline in the rate of change of fertility. But this is just one hypothetical possibility. The fundamental point is that substantial fertility variation, up or down, may occur over the longer run.

³³ Clearly the present analysis suggests that a re-examination of the primary trend itself in terms of the differing patterns of the groups distinguished here might prove fruitful.

REFERENCES

1. M. ABRAMOVITZ, reports in Nat. Bur. Econ. Research, Thirty-seventh, Thirty-eighth, Thirty-ninth, and Fortieth Annual Reports. New York 1957-60.
2. ———, "Growing Up in an Affluent Society," in *The Nation's Children*, Vol. I, *The Family and Social Change*, edited by Eli Ginzberg. New York 1960.
3. ———, Statement in Hearings before the Joint Economic Committee, 86th Cong., 1st Sess., Pt. 2, *Historical and Comparative Rates of Production, Productivity, and Prices*. Washington 1959, pp. 411-66.
4. ———, "The Nature and Significance of Kuznets Cycles," *Economic Development and Cultural Change*, Apr. 1961, 9, 225-48.
5. G. BANCROFT, *The American Labor Force: Its Growth and Changing Composition*. New York 1958.
6. D. J. BOGUE, *The Population of the United States*. Glencoe 1959.
7. A. F. BURNS, *Production Trends in the United States since 1870*. New York 1934.
8. J. S. DAVIS, "Implications of Prospective United States Population Growth in the 1960's," *Milbank Memorial Fund Quart.*, Apr. 1961, 39, 329-49.
9. ———, *The Population Upsurge in the United States*, War-Peace Pamph. No. 12. Food Research Institute, Stanford University, 1949.
10. ———, "The Population Upsurge and the American Economy, 1945-80," *Jour. Pol. Econ.*, Oct. 1953, 61, 369-88.
11. R. A. EASTERLIN, "Influences in European Overseas Emigration before World War I," *Econ. Develop. and Cult. Change*, Apr. 1961, 9, 331-51.
12. ———, "Long Swings in the Growth of the American Labor Force." MS., Nat. Bur. Econ. Research.
13. R. FREEDMAN, P. K. WHELPTON, AND A. A. CAMPBELL, *Family Planning, Sterility, and Population Growth*. New York 1959.
14. E. FRICKEY, *Production in the United States, 1860-1914*. Cambridge 1947.
15. V. L. GALBRAITH AND D. S. THOMAS, "Birth Rates and the Interwar Business Cycles," *Jour. Am. Stat. Assoc.*, Dec. 1941, 36, 465-76.
16. W. H. GRABILL, C. V. KISER, AND P. K. WHELPTON, *The Fertility of American Women*. New York 1958.
17. R. GUTMAN, "The Birth Statistics of Massachusetts during the Nineteenth Century," *Population Stud.*, July 1956, 10, 69-94.
18. E. E. HAGEN, "Population and Economic Growth," *Am. Econ. Rev.*, June 1959, 49, 310-27.
19. A. H. HANSEN, "Economic Progress and Declining Population Growth," *Am. Econ. Rev.*, March 1939, 29, 1-15.
20. ———, *Fiscal Policy and Business Cycles*. New York 1941.
21. "Housing of Nonfarm Families," *Fed. Res. Bull.*, Sept. 1959, pp. 1097-1113.

22. A. J. JAFFE AND R. O. CARLETON, *Occupational Mobility in the United States, 1930-1960*. New York 1954.
23. J. W. KENDRICK, *Productivity Trends in the United States*. Princeton 1961.
24. J. M. KEYNES, "Some Economic Consequences of a Declining Population," *Eugenics Rev.*, Apr. 1937, 39, 13-17.
25. E. R. KRAMM AND D. S. THOMAS, "Rural and Urban Marriage in Relation to the Sex Ratio," *Rural Soc.*, Mar. 1942, 7, 33-39.
26. S. KUZNETS, "Quantitative Aspects of the Economic Growth of Nations. I. Levels and Variability of Rates of Growth," *Econ. Develop. and Cult. Change*, Oct. 1956, 5, 1-94.
27. ———, "Long Swings in the Growth of Population and in Related Economic Variables," *Proc. Am. Philos. Soc.*, Feb. 1958, 102, No. 1, pp. 25-52.
28. ———, *Capital in the American Economy: Its Formation and Financing*. Princeton 1961.
29. ——— AND E. RUBIN, *Immigration and the Foreign Born*, Nat. Bur. Econ. Research Occas. Paper 46. New York 1954.
30. S. LEBERGOTT, "Annual Estimates of Unemployment in the United States, 1900-1954," in Universities-Nat. Bur. Committee for Econ. Research, *The Measurement and Behavior of Unemployment*, Spec. Conf. 8. Princeton 1957.
31. E. S. LEE *et al.*, *Population Redistribution and Economic Growth, United States, 1870-1950*, Vol. I. Philadelphia 1957.
32. H. LEIBENSTEIN, *Economic Backwardness and Economic Growth*. New York 1957.
33. C. D. LONG, *The Labor Force under Changing Income and Employment*. Princeton 1958.
34. ———, "The Illusion of Wage Rigidity: Long and Short Cycles in Wages and Labor Costs," *Rev. Econ. Stat.*, May 1960, 42, 140-51.
35. R. C. O. MATTHEWS, *The Business Cycle*. Chicago 1959.
36. B. OKUN, *Trends in Birth Rates in the United States since 1870*. Baltimore 1958.
37. P. J. O'LEARY AND W. A. LEWIS, "Secular Swings in Production and Trade, 1870-1913," *Manchester School Econ. and Soc. Stud.*, May 1955, 23, 113-52.
38. J. J. SPENGLER, *The Fecundity of Native and Foreign-Born Women in New England*, Brookings Institution, Pamph. Ser., Vol. 2, No. 1. Washington 1930.
39. F. STRAUSS AND L. H. BEAN, *Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937*, Dept. Agric., Tech. Bull. 703. Washington 1940.
40. B. C. SWERLING, *Agriculture and Recent Economic Conditions*. Federal Reserve Bank of San Francisco 1959.
41. C. AND I. B. TAEUBER, *The Changing Population of the United States*. New York 1958.

42. B. THOMAS, *Migration and Economic Growth*. Cambridge 1954.
43. D. S. THOMAS, *Social Aspects of the Business Cycle*. New York 1925.
44. ———, *Social and Economic Aspects of Swedish Population Movements, 1750-1933*. New York 1941.
45. W. S. THOMPSON AND P. K. WHELPTON, *Population Trends in the United States*. New York 1933.
46. H. YUAN T'EN, "A Demographic Aspect of Interstate Variations in American Fertility, 1800-1860," *Milbank Mem. Fund Quart.*, Jan. 1959, 37, 49-59.
47. A. TOSTLEBE, *Capital in Agriculture: Its Formation and Financing since 1870*. Princeton 1957.
48. UNITED NATIONS, DEPARTMENT OF SOCIAL AFFAIRS, *The Determinants and Consequences of Population Trends*, Population Stud., No. 17. New York 1953.
49. U. S. BUREAU OF THE CENSUS, *Census of Population: 1950. Special Report P-E No. 3A. Nativity and Parentage*. Washington 1954.
50. ———, *Census of Population: 1950, U. S. Summary*, II. Washington 1954.
51. ———, *Current Population Reports: Consumer Income*, Ser. P-60.
52. ———, *Current Population Reports: Population Characteristics*, Ser. P-20.
53. ———, *Current Population Reports: Population Estimates*, Ser. P-25.
54. ———, *Forecasts of the Population of the United States 1945-1975*, by P. K. Whelpton, assisted by H. T. Eldridge and J. S. Siegel. Washington 1947.
55. ———, *Historical Statistics of the United States, Colonial Times to 1957*. Washington 1960.
56. ———, *Immigrants and Their Children, 1920*, by N. Carpenter, Census Monogr. VII. Washington 1927.
57. ———, *Ratio of Children to Women, 1920*, by W. S. Thompson, Census Monogr. XI. Washington 1931.
58. ———, *Statistical Abstract of the United States, 1960*. Washington 1960.
59. U. S. BUREAU OF LABOR STATISTICS, *Employment and Earnings*, Feb. 1961, 7.
60. U. S. DEPARTMENT OF AGRICULTURE, *Agricultural Statistics 1960*. Washington 1961.
61. ———, AGRICULTURAL MARKETING SERVICE, *Farm Population: Effect of Definition Changes in Size and Composition of the Rural Farm Population, April 1960 and 1959*, Series Census-AMS(P-27). Washington, Apr. 17, 1961.
62. ———, AGRICULTURAL MARKETING SERVICE, *Farm Population Estimates for 1950-1959*, AMS-80 (1959), Washington, Feb. 1960.
63. ———, AGRICULTURAL MARKETING SERVICE, *Farm Population: Migration to and from Farms, 1920-54*, AMS-10. Washington, Dec. 1954.
64. U. S. NATIONAL RESOURCES COMMITTEE, *Population Statistics: 1. National Data*. Washington 1937.
65. ———, *The Problems of a Changing Population*. Washington 1938.

66. U. S. NATIONAL RESOURCES PLANNING BOARD, *Estimates of the Future Population of the United States 1940-2000*, prepared by W. S. Thompson and P. K. Whelpton. Washington 1943.
67. U. S. PUBLIC HEALTH SERVICE, *Vital Statistics of the United States 1958*, Vol. I. Washington 1960.
68. ———, *Monthly Vital Statistics Report*, Vol. 9, No. 13, May 31, 1961.
69. U. S. SENATE, 61st Cong., 3rd Sess., Doc. No. 747, Reports of the Immigration Commission, *Abstracts of Reports of the Immigration Commission*, Vol. II. Washington 1911, pp. 451-500.
70. UNIVERSITIES-NATIONAL BUREAU COMMITTEE FOR ECONOMIC RESEARCH, *Demographic and Economic Change in Developed Countries*, Spec. Conf. 11. Princeton 1960.
71. F. A. WALKER, "Immigration and Degradation," *Forum*, Aug. 1891, 11, 634-44.
72. ———, "Restriction of Immigration," *Atlantic Monthly*, June 1896, 77, 822-29.
73. M. ZELNICK, *Estimates of Annual Births and Birth Rates for the White Population of the United States from 1855 to 1934*. Unpublished doctoral dissertation, Princeton Univ., Oct. 1958.

APPENDIX A: BASIC DATA

This appendix presents the basic tables underlying Figures 1-8. Detailed notes explaining the underlying sources and methods and precise time reference of the observations will appear in the reprint of this study by the National Bureau of Economic Research.

TABLE A-1—RATE OF CHANGE, TOTAL WHITE POPULATION, 1870-75/1955-59

Period	Rate of Change in Specified Quinquennium (per cent)	Period	Rate of Change in Specified Quinquennium (per cent)
1870-75	13.0	1915-20	5.6
1875-80	9.9	1920-25	8.6
1880-85	13.5	1925-30	6.3
1885-90	10.4	1930-35	3.5
1890-95	10.2	1935-40	3.6
1895-1900	8.2	1940-45	5.1
1900-05	9.7	1945-50	7.1
1905-10	10.6	1950-55	7.9
1910-15	9.2	1955-59*	8.1

* Adjusted to rate of change per quinquennium.

Sources: Through 1955 [27, p. 37, Table 1, cols. (1) and (3)]. The 1959 estimate was obtained by extrapolating the 1955 figure shown in [27] on the basis of the Bureau of the Census estimates for total white population (including adjustment for underenumeration of children aged 0-4) for July 1, 1955 and 1959 [53, No. 146 (Nov. 12, 1956), p. 7, and No. 212 (Jan. 26, 1960), p. 9].

TABLE A-2—LEVEL AND RATE OF CHANGE, CRUDE BIRTH RATE OF TOTAL WHITE POPULATION, 1855-59/1955-59

Period	Crude Birth Rate, Annual Average in Specified Quinquennium (per thousand)		Change in Crude Birth Rate since Preceding Period (per cent per quinquennium on base of given and preceding period)	
	Zelnick (1)	Official (2)	Zelnick (3)	Official (4)
1855-59	46.5	—	—	—
1860-64	41.5	—	-11.4	—
1865-69	39.7	—	-4.4	—
1870-74	39.7	—	0	—
1875-79	38.0	—	-4.4	—
1880-84	36.1	—	-5.1	—
1885-89	35.3	—	-2.2	—
1890-94	34.0	—	-3.8	—
1895-99	31.2	—	-8.6	—
1900-04	28.8	—	-8.0	—
1905-09	29.4	—	+2.1	—
1910-14	28.2	29.1	-4.2	—
1915-19	26.9	27.6	-4.7	-5.3
1920-24	25.2	26.0	-6.5	-6.0
1925-29	21.5	22.4	-15.8	-14.9
1930-34	18.3	18.9	-16.1	-16.9
1935-39	—	18.0	—	-4.9
1940-44	—	20.4	—	+12.5
1945-49	—	23.4	—	+13.7
1950-54	—	23.8	—	+1.7
1955-59	—	23.7	—	-.04

Source:

Column 1 [73].

Column 2 1909-54 [16, p. 26, Table 11].

1955-59 [58, p. 52, Table 52].

TABLE A-3—LEVEL AND RATE OF CHANGE OF FERTILITY RATIO, 1865-69/1925-29, AND OF GENERAL FERTILITY RATE, 1920-24/1954-58, OF TOTAL WHITE POPULATION BY NATIVITY

Period	Fertility in Specified Quinquennium (per thousand)			Change in Fertility since Preceding Period (per cent per quinquennium on base of given and preceding period)		
	Total White (1)	Native White (2)	Foreign-Born White (3)	Total White (4)	Native White (5)	Foreign-Born White (6)
Fertility Ratio ^a						
1865-69	877	—	—	—	—	—
1870-74	855	—	—	-2.5	—	—
1875-79	812	771	971	-5.2	—	—
1880-84	783	743	938	-3.6	-3.7	-3.5
1885-89	744	706	889	-5.1	-5.1	-5.4
1890-94	723	672	927	-2.9	-4.9	+4.2
1895-99	665	628	819	-8.4	-6.8	-12.4
1900-04	636	606	768	-4.5	-3.6	-6.4
1905-09	632	601	754	-0.6	-0.8	-1.8
1910-14	610	566	793	-3.5	-6.0	+5.0
1915-19	614	575	792	+0.7	+1.6	-0.1
1920-24	586	574	648	-4.7	-0.2	-20.0
1925-29	505	508	486	-14.8	-12.2	-28.6
General Fertility Rate ^b						
1920-24	111.4	106.4	—	—	—	—
1925-29	95.7	93.4	—	-15.2	-13.0	—
1930-34	79.6	79.4	—	-18.4	-16.2	—
1935-39	74.7	75.6	—	-6.4	-4.9	—
1940-44	85.2	87.4	—	+13.1	+14.5	—
1945-49	100.7	102.6	—	+16.7	+16.0	—
1950-54	108.6	109.2	—	+7.5	+6.2	—
1954-58	114.8	115.4	—	+6.9 ^c	+6.9 ^c	—

^a Number of children under 5 years old per 1,000 women 20 to 44 years old.

^b Annual average total live births per 1,000 women 15 to 44 years old.

^c Adjusted to rate of change per quinquennium.

Source:

Fertility ratio, 1865-69/1925-29.

Estimates of the present study based in large part on an unpublished memorandum prepared by Everett S. Lee of the University of Pennsylvania Study of Population Redistribution and Economic Growth providing age and parentage detail underlying the quinquennial series for 1870 to 1940 published by Kuznets [27].

General fertility rate, 1920-24/1954-58

Column 1 Average of annual data in [55, Series B-23]. Recent year data from [58, p. 56].

Column 2 Average of annual data in [55, Series B-24]. Recent year data from [67, p. 3-22].

TABLE A-4—LEVEL AND RATE OF CHANGE OF FERTILITY RATIO OF NATIVE WHITE POPULATION, 1885-89/1925-29, AND OF TOTAL WHITE POPULATION, 1925-29/1954-58, BY RURAL-URBAN RESIDENCE

Period	Fertility Ratio in Specified Quinquennium (per thousand)			Change in Fertility Ratio since Preceding Period (per cent per decade, on base of given and preceding period)		
	Total (1)	Urban (2)	Rural (3)	Total (4)	Urban (5)	Rural (6)
Native White						
1885-89	671	434	818	—	—	—
1895-99	631	400	809	-6.1	-8.2	-1.1
1905-09	606	407	797	-4.0	+1.7	-1.5
1915-19	565	407	757	-7.0	0	-5.1
1925-29	503	384	686	-11.6	-5.8	-9.8
Total White						
1925-29	485	388	658	—	—	—
1935-39	400	311	551	-19.2	-22.1	-17.7
1945-49	551	479	673	+31.7	+42.5	+19.9
1954-58	651	566	n.a.	+18.5*	+18.5*	—

* Adjusted to rate of change per decade.

Source: Native white, 1885-89, 1895-99. Estimates of the present study based chiefly on census reports and [45]. 1905-09 through 1925-29 [64, p. 30]. Total white, 1925-29 through 1945-49 [16, p. 17]. 1954-58, col. (1) derived from [53, Number 212 (Jan. 26, 1960), p. 9]; col. (2) estimated on the assumption that the relative change for urban white was the same as that for total white in col. (1).

TABLE A-5—FOREIGN-BORN WHITE POPULATION, RATIO OF MALES 25-34 TO FEMALES 20-29, AND PER CENT OF LATTER MARRIED, 1890-1930

Date	Ratio of Males 25-34 to Females 20-29 at Specified Date (per cent) (1)	Females 20-29, Per Cent Married at Specified Date (2)
1890	126	60.4
1900	129	61.3
1910	147	67.0
1920	154	75.3
1930	137	66.1

Source:

Column 1 [49, p. 16].

Column 2 Computed from the census sources cited in [45, p. 397, note a].

TABLE A-6—FOREIGN-BORN WHITE POPULATION, LEVEL AND RATE OF CHANGE OF FERTILITY RATIO, AND OF RATIO OF MALES 25-34 TO FEMALES 20-29 AND OF FEMALES 20-34 TO FEMALES 20-44, 1875-79/1925-29

Period	Fertility Ratio in Specified Quinquennium (per thousand)	Ratio of Males 25-34 to Females 20-29	Ratio of Females 20-34 to Females 20-44	Change since Preceding Date (per cent per quinquennium, on base of given and preceding period)		
		At Following Census or Mid-census Date (per cent)		Fertility Ratio	Ratio of Males 25-34 to Females 20-29	Ratio of Females 20-34 to Females 20-44
	(1)	(2)	(3)	(4)	(5)	(6)
1875-79	971	140.1	56.9	—	—	—
1880-84	938	126.7	59.1	-3.5	-10.0	+3.8
1885-89	889	126.4	63.1	-5.4	-0.2	+6.5
1890-94	927	138.0	64.0	+4.2	+8.8	+1.4
1895-99	819	128.8	61.9	-12.4	-6.9	-3.3
1900-04	768	135.9	59.9	-6.4	+5.4	-3.2
1905-09	754	147.0	62.3	-1.8	+7.9	+3.9
1910-14	793	152.2	62.3	+5.0	+3.5	0
1915-19	792	153.6	57.6	-0.1	+0.9	-7.8
1920-24	648	147.8	54.4	-20.0	-3.8	-5.7
1925-29	486	137.1	50.5	-28.6	-7.5	-7.4

Source:

Column 1 Table A-3, col. 3.

Columns 2 and 3 Census dates: from census reports. Mid-census dates; estimates of the present study based in part on census reports [29] [31].

TABLE A-7a—LEVEL AND RATE OF CHANGE, FERTILITY RATIO OF RURAL WHITE POPULATION AND REAL GROSS FARM INCOME PER ENGAGED, 1885-89/1925-29

Period	Fertility Ratio in Specified Quinquennium (per thousand)	Real Gross Farm Income per Engaged in Quinquennium Approximately 1.25 Years Earlier (index: 1924-28=100)	Change since Preceding Period (per cent per quinquennium, on base of given and preceding period)	
			Fertility Ratio	Real Gross Farm Income per Engaged
	(1)	(2)	(3)	(4)
1885-89	845 ^a	55.4	—	—
1895-99	836	56.0	-0.6 ^a	+0.6
1905-09	821	81.9	-0.9	+18.8
1915-19	781	118.8	-2.5	+18.4
1925-29	686	100.0	-6.5	-8.6

^a Adjustment of the figure in column (1) to reflect underenumeration of children under 5 in excess of the National Resources Committee allowance of 5 per cent yields a value of 887. The rate of change in column (3) based on this adjusted 1885-89 figure is -3.0 per cent.

Source:

Column 1 Estimates of the present study based on census reports and [45].

Column 2 Gross farm income in current prices [39, p. 24, Table 8].

Persons engaged in farming [23, Table A-VI, pp. A-115-116]. Figures for the decade of the 'eighties are estimates of the present study based on [47, p. 46, Table 4].

Consumer's price index [34, pp. 150-51].

TABLE A-7b—LEVEL AND RATE OF CHANGE, CRUDE BIRTH RATE OF TOTAL FARM POPULATION AND REAL NET FARM INCOME PER HEAD OF FARM POPULATION, 1920-24/1954-58

Period	Crude Birth Rate, Annual Average in Specified Quinquennium (per thousand)	Real Net Farm Income per Head of Farm Population in Quinquennium 1.25 Years Earlier (Index: 1924-28=100)	Change since Preceding Period (per cent per quinquennium on base of given and preceding period)	
			Crude Birth Rate	Real Net Farm Income per Head
	(1)	(2)	(3)	(4)
1920-24	26.0	85.0	—	—
1925-29	25.1	100.0	-3.6	+16.2
1930-34	22.7	76.9	-9.7	-26.1
1935-39	22.6	96.3	-0.5	+22.4
1940-44	23.9	149.0	+5.4	+43.0
1945-49	25.5	217.6	+6.4	+37.4
1950-54	24.8	185.5	-2.6	-15.9
1954-58	25.1	167.3	+1.5 ^a	-12.9 ^a

^a Adjusted to rate of change per quinquennium.

Source:

Column 1 1920-1949, [63, pp. 8-14]. 1950-58, [62, p. 6].

Column 2 Net income to persons on farms from farming [55, p. 283, series K-128]. 1955-58 [60, p. 488, Table 688].

Farm population, same sources as for col. (1).

Prices paid by farmers for family living, 1920-54 [55, Series K-132]. 1955 on [60, p. 479, Table 682].

TABLE A-8—LEVEL AND RATE OF CHANGE OF URBAN NATIVE WHITE FERTILITY RATIO, UNEMPLOYMENT RATE OF CIVILIAN LABOR FORCE, AND RATE OF CHANGE OF TOTAL WHITE MALE POPULATION AGED 20-29, 1885-89/1954-58

Period	Fertility Ratio in Specified Quinquennium* (per thousand)	Per Cent of Civilian Labor Force Unemployed in Quinquennium Approximately 1.25 Years Earlier	Change in Total White Male Population Aged 20-29 in Specified Quinquennium (per cent per quinquennium)	Change since Preceding Period		
				Fertility Ratio (per cent per decade on base of given and preceding quinquennium)	Per Cent of Civilian Labor Force Unemployed (percentage points)	Change in Total White Male Population Aged 20-29 (percentage points)
	(1)	(2)	(3)	(4)	(5)	(6)
1885-89	434	5.0	11.4	—	—	—
1895-99	400	11.7	7.4	-8.1	+6.7	-4.0
1905-09	407	3.8	15.8	+1.7	-7.9	+8.4
1915-19	407	5.7	-2.2	0	+1.9	-18.0
1925-29	384 ^a	4.0	7.7	-5.8	-1.7	+9.9
1935-39	311	18.4	3.3 ^a	-22.0	+14.4	-4.4
1945-49	479	2.8 ^b	-0.4	+42.5	-15.6	-4.0
1954-58	566	4.3	-2.6	+18.5 ^d	+1.7 ^d	-2.4 ^d

* For 1935-39 on figures are for urban total white. The overlap value for 1925-29 comparable to later dates is 388.

^b Figures for 1954-58 are from a different source than those for earlier dates. The overlap value for 1945-49 comparable to 1954-58 is 2.9.

^a Figures for 1945-49 on are from a different source than those for earlier dates. The overlap value for 1935-39 comparable to later dates is 3.6.

^d Adjusted to rate of change per decade.

Sources:

Column 1 Table A-4, col. 2.

Column 2 1900-1948 [30, p. 215]. 1944-48 (overlap value) and 1953-57 [59, p. 1, Table A-1]. 1894-98, a preliminary extension of the 1900-1948 series kindly provided by Stanley Lebergott. The 1884-88 estimate was made by the present writer on the basis of [14, p. 128].

Column 3 Through 1935-39, computed from figures for census dates from basic census reports, and for mid-census dates from estimates of present study made largely on the basis of the first source cited in Table A-3. For 1935-39 (comparable to later years) on, figures computed from [53, Nos. 98, 114, 146, 212].

APPENDIX B: ANALYSES OF COMPONENTS OF CHANGE IN TOTAL WHITE AND TOTAL NATIVE WHITE FERTILITY

TABLE B-1—NATIVITY COMPONENTS OF CHANGE IN TOTAL WHITE
FERTILITY RATIO, 1875-79/1925-29

Period	Fertility Ratio in Specified Quinquennium (per thousand)			Change in Total White Fertility Ratio since Preceding Period Attributable to Contribution of				
	Total White	Native White	Foreign-Born White	All Factors	Change in Fertility Ratio of		Change in Nativity Distribution of White Females Aged 20-44	Interaction Terms
					Native White	Foreign-Born White		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1875-79	812	771	971	—	—	—	—	—
1880-84	783	743	938	-29	-22	-7	—	—
1885-89	744	706	889	-39	-29	-10	—	0
1890-94	723	672	927	-21	-27	+8	-2	0
1895-99	665	628	819	-58	-35	-21	-1	-1
1900-04	636	606	768	-29	-18	-10	-1	0
1905-09	632	601	754	-4	-4	-3	+2	+1
1910-14	610	566	793	-22	-28	+8	-1	-1
1915-19	614	575	792	+4	+7	—	-3	0
1920-24	586	574	648	-28	-1	-26	-3	+2
1925-29	505	508	486	-81	-55	-27	-1	+2

Source and method:

Columns 1-3 Table A-3, cols. (1)-(3).

Columns 5-7 Method: the values of all components were held constant at their beginning of period levels except for the component whose contribution was being assessed, and the change in the total that would have resulted from the change in this component alone was computed.

Column 8 Col. (4) - cols. (5)-(7).

TABLE B-2—URBAN-RURAL COMPONENTS OF CHANGE IN NATIVE
WHITE FERTILITY RATIO, 1885-89/1925-29

Period	Fertility Ratio in Specified Quinquennium (per thousand)			Change in Native White Fertility Ratio since Preceding Period Attributable to Contribution of				
	Total Native White	Urban Native White	Rural Native White	All Factors	Change in Fertility Ratio of		Change in Urban-Rural Distribution of Native White Females Aged 20-44	Interaction Terms
					Urban Native White	Rural Native White		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1885-89	671	434	818	—	—	—	—	—
1895-99	631	400	809	-40	-13	-6	-20	-1
1905-09	606	407	797	-25	+3	-7	-24	+3
1915-19	565	407	757	-41	0	-20	-21	0
1925-29	503	384	686	-62	-13	-32	-20	+3

Source and method:

Columns 1-3 Table A-4, cols. (1)-(3).

Columns 5-8 See explanation for Table B-1, cols. (5)-(8).

THE ROLE OF MONEY IN TRADE-BALANCE STABILITY: SYNTHESIS OF THE ELASTICITY AND ABSORPTION APPROACHES

By S. C. TSIANG*

The spirited controversy between S. S. Alexander [1] [2] and Fritz Machlup [13] [14] on the relative merits of the relative prices (or elasticities) and aggregate spending (absorption) approaches to the problem of determining the effect of devaluation appears to have ended, for the time being, in a rather disappointing anticlimax. After having witnessed the mutual accusation of the rival approaches as consisting of implicit theorizing based upon purely definitional tautologies [13, pp. 268-71] [2, pp. 22-24], one feels somewhat let down by the compromise which Alexander now proposes [2, pp. 26-34]: that the result obtained by the traditional elasticities approach may be treated as the "initial" (or primary) effect of a devaluation to which a sort of "multiplier" (normally less than unity), computed from the propensities to hoard, to import, etc., is to be applied to yield the final effect of the devaluation.

The extension of the elasticity approach by a superimposition of a multiplier analysis in this manner is essentially the same as what A. J. Brown had already done in 1942.¹ Indeed, it was already indicated by J. Robinson [18, esp. p. 93] in her pioneering article on the foreign exchanges first published in 1937.

The superimposition of a multiplier upon the elasticities solution of the effect of a devaluation usually glosses over the following difficulty: Unless the supplies of exportable and domestic goods in both countries concerned are all infinitely elastic, so that prices in both countries (except prices of imports) will remain constant, the multiplier effect of the initial change in the trade balance will bring about further changes in relative prices, and hence further substitution between imports and domestically produced goods in both countries. Thus if the conventional elasticities solution is treated as a sort of multiplicand, to which a multiplier (or a damping coefficient) is to be applied to obtain the final effect, then the multiplier itself should again involve the relevant elasticities that are in the multiplicand. There can be no neat dichotomy

* The author is professor of economics at the University of Rochester. He is indebted to T. C. Liu and E. Zabel for discussion at different stages of the preparation of this paper, and to Fritz Machlup, J. J. Polak, J. M. Fleming, and R. A. Mundell for reading the manuscript and making a number of valuable suggestions.

¹ See [6, esp. pp. 64-66]; also Allen [3].

of the final effect of a devaluation into a part that consists of the elasticities solution and another that consists of the multiplier (or absorption) solution. The total effect of a devaluation must be analyzed in a comprehensive system in which changes in incomes, prices and outputs are all taken into consideration. In fact, even before Alexander raised the outcry against the elasticities approach and proposed the substitution of the absorption approach, a number of attempts had already been made to analyze the effect of a devaluation with more or less comprehensive mathematical systems that allow for both income and price changes, notably those by Meade [15], Harberger [7], Laursen and Metzler [12], and Stuvell [22]. If the controversy between the relative-prices and aggregate-spending approaches merely leads to a synthesis which had already been worked out before the controversy, what then has been gained by the debate?

If anything of enduring value has come out of Alexander's proposal of the absorption approach, it is the fact that the simple identity:

$$\begin{array}{rcccl}
 B & = & Y & - & A \\
 \text{Trade} & & \text{National} & & \text{Absorption} \\
 \text{Balance} & & \text{Income} & & \text{or National} \\
 & & & & \text{Expenditure}
 \end{array}$$

which he pushed to the forefront in the analysis of the effect of a devaluation, has brought out in strong relief a fundamental fact, viz., that a negative trade balance necessarily implies national expenditure in excess of national income. This obvious truth was underscored by Machlup [13, pp. 272-73] who therefore emphasized the role played by credit creation in sustaining the excess expenditure in the case of a trade deficit (a negative B) and concluded that "nothing can be said about the effects of a devaluation unless exact specifications are made regarding the supply of money and credit." The highlighting of the monetary implications of a balance-of-payments deficit or surplus was also stressed by Johnson [10, pp. 156-58] as the major contribution of the absorption approach. More recently, Michaely, in an attempt to reconcile the relative-prices and absorption approaches under the assumption of full employment, also naturally resorted to the "real balance effect" of devaluation-induced price changes with the money supply kept constant [16]. Thus as a by-product of Alexander's attack on the elasticities approach, the much neglected role played by the supply of money and credit in working out the effect of a devaluation and the stability of the trade balance is once more being recognized.²

² Monetary factors were certainly not overlooked by classical economists, who regarded the contraction or expansion of the money supply under the gold standard as the automatic mechanism for the adjustment of the balance of payments. It is with the advent of the "new economics" and the breakdown of the gold standard that monetary factors came to be disregarded in the discussion of the balance of trade and devaluation.

The rediscovery of the significance of monetary factors, however, has not yet been reflected in the formulae and mathematical models for the analysis of the effect of a devaluation on the balance of trade. Not only did the conventional elasticities formulae of the effect of devaluation take no account of the monetary factors (since implicitly they generally assume a constant money income), but in the various attempts to combine the elasticities approach with a multiplier analysis (e.g., those of Brown [6] and Allen [3], and even in most of the more or less comprehensive models of Harberger [7], Laursen and Metzler [12], Stuvell [22],³ and Jones [11]), the role of money and credit was also totally disregarded. In a quite recent attempt to marry the elasticity and the absorption approaches, Brems also did not include either the money supply or the rate of interest in his otherwise rather complicated mathematical model [5]. Even Alexander himself tends to neglect the role of money; for in his discussion of the multiplier process engendered by the initial change in the trade balance, a process supposed to be determined by the propensities to hoard and to spend on imports and exportables, the monetary mechanism of income expansion was never brought in at all. It was only in his discussion of the cash balance effects at full employment that the money supply was briefly mentioned [2, p. 33].

In this respect, Meade's model for the analysis of the balance of payments stands out as a splendid exception; for he alone included the money supply and the rate of interest as variables in his model and always clearly stated the specific assumptions he made about monetary and fiscal policies. Unfortunately, however, Meade worked out the solution for the effect of a devaluation from his model only under the assumption of either a so-called "Keynesian neutral economy" or that of a monetary policy that ensures "internal balance." Under the "neutral economy" assumption, the monetary authorities are supposed to keep the supply of money infinitely elastic at a constant interest rate, so that the supply of money will passively adapt itself to whatever the demand for money might be at the constant interest rate [15, pp. 31, 49]. This in effect obliterates all possible influences the supply of money and the interest rate might have on his solution for the effect of a devaluation. On the other hand, the assumption of a monetary policy that ensures "internal balance" (i.e., a constant level of employment [15, pp. 33, 56-57]), coupled with the assumptions that money wage rates are exogenously given and that prices always equal marginal labor cost, in effect implies that money income is somehow effectively kept constant, provided money wage rates remain constant. This again

³ Harberger, in his review article [8, esp. pp. 858-59], strongly criticized Stuvell for not even mentioning the amount of money or the rate of interest in his analysis, nor stating what kind of monetary or fiscal policy he assumes. Harberger also admitted that he himself committed the same omission in his own earlier attempt at model construction.

eliminates all the positive influences the money supply and the interest rate might exert on the effect of a devaluation, as they are assumed to adjust themselves passively to the requirements of the policy objective of maintaining money income constant [15, pp. 68-72; Table 4, p. 150].

The purpose of this paper is to demonstrate the crucial role that could be played by monetary factors and thus to show in a more comprehensive way how relative prices and income-expenditure adjustments combine to determine the effect of a devaluation. To avoid further proliferation of models, each with the idiosyncracies of its creator fully displayed in the choice of variables and notation system, I shall adopt Meade's simplified two-country, two-commodity model, which seems by far the most economically sound, and shall only make a slight modification to make good an omission (viz., that of the effect of changes in the terms of trade on aggregate expenditure) which has been much discussed since Harberger, Laursen and Metzler pointed out its possible significance. I shall also trim his model of all nonessential policy variables, such as tariff rates and various shift variables, which he adopted to represent controlled or uncontrolled shifts in various functional relationships, so as to make the system intelligible to the reader without overtaxing his perseverance.⁴

I. *The Model*

We shall adopt Meade's notation throughout so as to facilitate comparison between his results and ours. In Meade's notation, a subscript a refers to country A and a subscript b to country B. The subscript ab for a term indicates that it is the sum of a corresponding A-term and B-term (e.g., $\pi_{ab} = \pi_a + \pi_b$). Capital italic letters refer to total quantities; small italic letters to small increments (or differentials) of those qualities; and a bar over a term means a price corresponding to that term. The small Greek letters stand for functional relationships between the differentials (i.e., either partial derivatives or elasticities obtained from such partial derivatives). Thus:

Q_a = A's product.

\bar{Q}_a = the price of A's product, which is put equal to 1 at the initial position by using the appropriate unit for Q_a .

H_a = volume of employment in country A.

\bar{H}_a = the money wage rate in country A, which is put equal to 1 at the initial position by choosing the appropriate unit for H_a .

⁴ The popularity of Meade's excellent work has suffered a great deal from the overcomplicated model and its formidable list of variables, which he presented at the very beginning of his book, but which he himself abandoned later as too cumbersome to yield any definite result. Even Alexander complained that Meade's model is "unintelligible to any but the most dogged readers" [2, p. 24].

I_a = the physical volume of A's imports, which constitute B's exports.

D_a = domestic expenditures in A in terms of domestic currency.

R_a = the rate of interest in A.

M_a = the amount of money in A.

The corresponding terms for country B with the subscript b are similarly defined.

E = the rate of exchange expressed as the number of units of A's currency per unit of B's currency, which is again put equal to 1 at the initial position by choosing the appropriate unit for B's currency.

T = the balance of trade, i.e., the net excess of A's receipts from exports valued in A's currency.

It is assumed that at the initial position:

$$I_a \bar{Q}_b E = I_b \bar{Q}_a = I_a = I_b = I.$$

The differentials of these terms are represented by the corresponding small italic letters with the same subscripts, thus $dQ_a = q_a$, $d\bar{Q}_a = \bar{q}_a$, etc.

Meade's system as simplified for our purpose may be represented by the following system of equations in differentials. First, we have a pair of identities for the increments in domestic expenditures for the two countries:

$$(1) \quad d_a \equiv q_a - i_b + i_a + (Q_a - I)\bar{q}_a + I\bar{q}_b + Ie,$$

$$(2) \quad d_b \equiv q_b - i_a + i_b + (Q_b - I)\bar{q}_b + I\bar{q}_a - Ie,$$

which are obtained by differentiating the following definitional expenditure identities:

$$D_a \equiv \bar{Q}_a(Q_a - I_b) + \bar{Q}_b EI_a,$$

$$D_b \equiv \bar{Q}_b(Q_b - I_a) + \bar{Q}_a \frac{1}{E} I_b.$$

Next Meade gives us the two domestic expenditure functions in differentials:

$$(3) \quad d_a = (1 - \lambda_a)q_a - \rho_a r_a + D_a \bar{q}_a,$$

$$(4) \quad d_b = (1 - \lambda_b)q_b - \rho_b r_b + D_b \bar{q}_b,$$

where $(1 - \lambda_a)$ and $(1 - \lambda_b)$ are the partial derivatives of domestic expenditures with respect to domestic money incomes, and hence λ_a and λ_b are the marginal propensities to hoard, and ρ_a and ρ_b are the partial derivatives of domestic expenditures with respect to the interest rate in the two countries, respectively. The terms $D_a \bar{q}_a$ and $D_b \bar{q}_b$ are intro-

duced to indicate that these expenditures functions are "real functions" in the sense that domestic expenditure in real terms is a function of real income, so that a change in the general price level would bring about a proportionate change in money expenditures. Here for the sake of simplicity, Meade has taken the change in the price level of domestic products to represent the change in the general price level so that the effect of a change in the terms of trade on the price level and on the level of aggregate domestic expenditures is neglected.⁵

However, the effect upon domestic expenditure of a change in the terms of trade produced by a devaluation has been emphasized by both Harberger [7, pp. 50-55] and Laursen and Metzler [12, pp. 295-97] as having the effect of making the stability condition for the exchange rate more stringent. To assume away with Meade the effect of the terms of trade on domestic expenditure would, therefore, seem to gloss over a potentially significant factor. In fact, Meade has been strongly criticized by H. Johnson for this omission [10A, pp. 816-18 and 830-32]. Actually, Meade could have allowed for the effect of a change in the terms of trade on domestic expenditure without making the aggregate expenditure functions too complicated to handle. For if we assume with Meade that the relationship between domestic expenditure and its determinants is a "real" and not a "money" relationship and that there is no money illusion (so that the money expenditure function is homogeneous of degree 1 in money income and all prices, including prices of imports), then the two equations for changes in aggregate expenditures,

⁵ In effect, (3) and (4) are derived by differentiating aggregate expenditure functions of the type:

$$(i) \quad D_s = D_s\{Q_s\bar{Q}_s, \bar{Q}_s, R_s\}$$

which is supposed to be homogeneous of degree 1 in $Q_s\bar{Q}_s$ and \bar{Q}_s . By Euler's Theorem,

$$\begin{aligned} D_s &= \frac{\partial D_s}{\partial (Q_s\bar{Q}_s)} \cdot Q_s\bar{Q}_s + \frac{\partial D_s}{\partial \bar{Q}_s} \bar{Q}_s \\ (ii) \quad &= (1 - \lambda_s)Q_s + \frac{\partial D_s}{\partial \bar{Q}_s} \bar{Q}_s \\ \therefore \frac{\partial D_s}{\partial \bar{Q}_s} &= D_s - (1 - \lambda_s)Q_s. \end{aligned}$$

Substitute (ii) in the differentiation of (i), we get:

$$d_s = (1 - \lambda_s)q_s + D_s\bar{q}_s - \rho_s r_s.$$

Alternatively, (3) and (4) may be regarded as derived from expenditure functions of the form:

$$(iii) \quad \frac{D_s}{\bar{Q}_s} = D_s^* \left\{ \frac{Q_s\bar{Q}_s}{\bar{Q}_s}, R_s \right\},$$

which, upon differentiation, yields directly the same result.

taking into consideration the effect of the terms of trade, would be no more complicated than:

$$(3a) \quad d_a = (1 - \lambda_a)q_a - \rho_a r_a + D_a \bar{q}_a - \lambda_a I(\bar{q}_a - \bar{q}_b - e)$$

and

$$(4a) \quad d_b = (1 - \lambda_b)q_b - \rho_b r_b + D_b \bar{q}_b - \lambda_b I(\bar{q}_b - \bar{q}_a + e).^6$$

In view of the lively controversy over the possible effect of a change in the terms of trade upon aggregate domestic expenditure,⁷ I shall try to derive (3a) and (4a) in the most unsophisticated and least controversial way. Let us suppose that in the absence of money illusion and dynamic price expectations, domestic expenditure in real terms is a function of domestic real income and the interest rate, i.e.,

$$(5) \quad \frac{D_a}{P_a} = D_a \left\{ \frac{Q_a \bar{Q}_a}{P_a}, R_a \right\}$$

where P_a is the general price level in country A, defined as:

$$(6) \quad P_a = \frac{D_a - I_a}{D_a} \cdot \bar{Q}_a + \frac{I_a}{D_a} \cdot \bar{Q}_b E,$$

which is equal to 1 at the initial position, since $\bar{Q}_a = \bar{Q}_b = E = 1$. Equation (5) indicates that domestic money expenditure is homogeneous of degree 1 in money income and all prices.⁸

Differentiating (5) and (6) and substituting, we get:

$$\begin{aligned} d_a - (D_a - I) \bar{q}_a - I(\bar{q}_b + e) \\ = (1 - \lambda_a) \left[q_a + Q_a \bar{q}_a - \frac{Q_a(D_a - I)}{D_a} \bar{q}_a - \frac{Q_a I}{D_a} (\bar{q}_b + e) \right] - \rho_a r_a. \end{aligned}$$

⁶ This was first pointed out to me by T. C. Liu of Cornell University.

⁷ See, for example, [25] [21] [17] and [11]. Although Laursen and Metzler have specifically discussed the effect of a change in the exchange rate upon domestic money expenditure, including investment as well as consumption, later participants in this discussion have concentrated exclusively on the effect upon consumption expenditure to the total neglect of the effect upon investment expenditure, as if the latter may be assumed to be fixed in money terms with a change in import prices. Actually, under the assumptions of no money illusion and no dynamic price expectations, there is as much reason to assume money expenditure on investment to be homogeneous of degree 1 in all prices and money income as to assume the same for money expenditure on consumption.

⁸ The money balances effect (or the Pigou effect) of a proportionate rise in money income and all prices may preclude the homogeneity of the money expenditure function. However, an increase in the relative scarcity of cash balances implies a rise in the marginal convenience yield of money balances and hence would lead to a rise in the interest rate, which is included as another determining variable of the expenditure function. The Pigou effect of a proportionate rise in all prices is therefore taken care of in the term $\rho_a r_a$, and hence would not interfere with the homogeneity of the expenditure function in money income and all prices, exclusive of the interest rate.

Since at the initial position $Q_a = D_a$, therefore,

$$d_a = (1 - \lambda_a)q_a + D_a \bar{q}_a - \lambda_a I(\bar{q}_a - \bar{q}_b - e) - \rho_a r_a.$$

By a similar procedure, (4a) may be obtained.⁹ Equations (3a) and (4a) clearly indicate that the partial derivative of domestic expenditure with respect to a change in the terms of trade (an improvement is here to be treated as a positive change and a worsening a negative change) is equal to minus the marginal propensity to hoard times the initial amount of imports of the country concerned (i.e., $-\lambda_a I$ or $-\lambda_b I$).¹⁰

The two import functions are written by Meade in differentials as follows: For country A,

$$\begin{aligned} (7) \quad i_a &= \pi_a d_a + [- (Q_a - I)\pi_a + I\epsilon_a] \bar{q}_a - I(\pi_a + \epsilon_a)(\bar{q}_b + e) \\ &= \pi_a d_a - \pi_a Q_a \bar{q}_a + I(\pi_a + \epsilon_a)(\bar{q}_a - \bar{q}_b - e) \end{aligned}$$

where π_a is A's propensity to import defined with reference to A's aggregate national expenditure instead of national income; ϵ_a is what he calls "the expenditure compensated price elasticity of demand for imports in A" (or in other words, the elasticity of the pure substitution effect on A's import demand with respect to the relative price ratio between domestic products and imports); and hence $-(Q_a - I)\pi_a \bar{q}_a$ and $-I\pi_a(\bar{q}_b + e)$ are the familiar Slutsky-Hicksian income effect on A's demand for imports of a change in the price of A's domestic products and a change in A's import prices, respectively, and $I\epsilon_a(\bar{q}_a - \bar{q}_b - e)$ the pure substitution effect on A's import demand of the change in the relative price ratio in A between domestic products and imports.¹¹

Similarly, for country B, we have

$$(8) \quad i_b = \pi_b d_b - \pi_b Q_b \bar{q}_b + I(\pi_b + \epsilon_b)(\bar{q}_b - \bar{q}_a + e)$$

⁹ A crucial assumption here is that $Q_a \bar{Q}_a = Q_a = D_a$ and $Q_b \bar{Q}_b = Q_b = D_b$ at the initial position which is implied in the assumption that trade is initially balanced.

¹⁰ This result agrees fully with those obtained by Harberger and Jones. Harberger, in whose model there is no investment, has shown that the effect of the terms of trade (an adverse change is treated as a positive change) is equal to the propensity to save times the initial amount of imports [7, pp. 52-53]. Jones, by a more general and elegant method, has shown that the partial derivative of consumption expenditure with respect to a rise in import prices is equal to: (1 minus the ratio of the marginal propensity to consume to the average propensity to consume) times the initial amount of imports [11, pp. 78-79]. Substituting total expenditure and the propensity to spend for consumption expenditure and the propensity to consume, respectively, and taking into account the assumption that in our model the average propensity to spend is 1 in the initial position (trade being initially balanced), their results can be readily converted to ours.

¹¹ The Slutsky-Hicksian way of splitting off the income effect of a price change presumes that the effect on real income of a change in the price of a commodity, with money income fixed, is equal to the initial volume of that commodity purchased times the change in its price. In his criticism of Harberger, however, Spraos has rightly pointed out that in so far as there is a part of income which is neither spent on domestic products nor on imports, the loss in real income out of a fixed money income implied by, say, a rise in import prices is greater than the

The income effect components of the effect on import demand of a change in domestic prices or import prices perhaps require a little further explanation. Since Meade has defined π_a as the partial derivative of imports with respect to domestic expenditure instead of national income, it might be thought that in formulating these import functions, Meade has not been consistent with his definition of the propensity to import. For it might be questioned that if π_a (or π_b) is defined as the marginal propensity to import with reference to aggregate money expenditures, should not the income effect on the demand for imports of a change in, say, domestic prices be written as $-(Q_a - I)\pi_a(1 - \lambda_a)q_a$, since out of the equivalent implicit increase in money income only $(1 - \lambda_a)$ part of it will result in new expenditure and only π_a times the new expenditure concerned will be on additional imports? This inconsistency, however, is only apparent; for if the decrease in domestic prices should result in a net decrease in aggregate money expenditure (a net hoarding) equal to $\lambda_a(Q_a - I)$, its effect on import demand is already taken care of by the term $\pi_a d_a$. When aggregate money expenditure is included as a separate determining variable of import demand, therefore, we may assume, in formulating the income effect of a change in domestic prices (or in import prices), that all the implicit increase in income will be spent or that all the implicit decrease in income will be borne by a cut in expenditure.

Meade's definition of the propensity to import with reference to aggregate expenditure must be regarded as an improvement over the conventional one which related the demand for imports to domestic national income. For the demand for imports, in so far as they are finished

initial amount of imports consumed times the rise in import prices; for the loss in real value of the part of income that was initially not spent must also be compensated. Otherwise the demand function would imply some degree of money-illusion. In the present case, however, it is assumed that trade was initially balanced so that all income must have been spent initially either on imports or on domestic products. Hence, as Spraos himself has conceded, his objection would not apply to the present case [21, p. 144, esp. fn. 4].

Meade's import demand equations, i.e., (7) and (8), certainly cannot be accused of implying the presence of money illusion, because it can be shown that the partial derivatives of the demand for imports in these two equations satisfy Euler's theorem for a homogeneous equation of degree zero in all the determining variables; for from, say, equation (7) we have:

$$\frac{\partial I_a}{\partial D_a} = \pi_a; \quad \frac{\partial I_a}{\partial \bar{Q}_a} = [-(Q_a - I)\pi_a + I\epsilon_a]$$

and

$$\frac{\partial I_a}{\partial (\bar{Q}_b E)} = -I(\pi_a + \epsilon_a).$$

Thus

$$\pi_a D_a + [-(Q_a - I)\pi_a + I\epsilon_a]\bar{Q}_a - I(\pi_a + \epsilon_a)\bar{Q}_b E = 0,$$

since at the initial position $\bar{Q}_a = \bar{Q}_b = E = 1$, and $D_a = Q_a$.

products, as is tacitly assumed in this model, is clearly primarily a function of total expenditure and, hence, is correlated with national income only at one remove (i.e., through the correlation between income and expenditure). Since in the present model the relationship between income and expenditure is subject to the influence of both the interest rate and the terms of trade, the relationship between income and demand for imports may also be expected to change under the influences of these factors. Such influences on the functional relationship between income and import demand can only be taken into account when the propensity to import is defined as Meade did, i.e., with respect to expenditures instead of income.

Next we shall adopt Meade's equations for the changes in domestic prices simplified by the assumption of constant money wages, viz.

$$(9) \quad \bar{q}_a = \frac{1}{\eta_a} \frac{q_a}{Q_a}$$

$$(10) \quad \bar{q}_b = \frac{1}{\eta_b} \frac{q_b}{Q_b}$$

where η_a and η_b are the elasticities of supply of A and B's products, respectively, in terms of real labor cost (i.e., in terms of wage units).¹²

When full employment is reached, the expressions on the right-hand side of (9) and (10) would automatically become indeterminate forms, with q and η both approaching zero, and thus would leave it entirely to

¹² These are derived from the condition that the prices of domestic products in both countries must equal the marginal costs of those products, i.e.,

$$(11) \quad \bar{Q}_a = \bar{H}_a \frac{h_a}{q_a},$$

$$(12) \quad \bar{Q}_b = \bar{H}_b \frac{h_b}{q_b}.$$

Differentiating (11), we get:

$$\bar{q}_a = \bar{H}_a d \left(\frac{h_a}{q_a} \right) + \frac{h_a}{q_a} \bar{h}_a = d \left(\frac{h_a}{q_a} \right)$$

since \bar{H}_a is assumed constant and put equal to 1 at the initial position. By definition,

$$\eta_a = \frac{\frac{h_a}{q_a}}{\frac{q_a}{Q_a}} = \frac{Q_a}{d \left(\frac{h_a}{q_a} \right)}.$$

By (11), however, when \bar{Q}_a and \bar{H}_a are put equal to 1, h_a/q_a must also equal 1.

$$\therefore \bar{q}_a = d \left(\frac{h_a}{q_a} \right) = \frac{1}{\eta_a} \frac{q_a}{Q_a}.$$

The derivation of (10) is exactly the same.

the other equations of the system to determine the changes in domestic prices with no change in domestic products (i.e., a zero q).

We shall also simplify the demand-for-money equations in Meade's model by getting rid of the assumed link between money supply and gold or foreign exchange reserves, as there is hardly any country that mechanically follows this rule of the gold standard game. Thus we shall simply state that:

$$(13) \quad m_a = \xi_a(q_a + Q_a\bar{q}_a) - \zeta_a r_a$$

$$(14) \quad m_b = \xi_b(q_b + Q_b\bar{q}_b) - \zeta_b r_b$$

where ξ_a and ξ_b are redefined, as distinct from Meade's own usage, as the partial derivatives of the demand for money with respect to money income in countries A and B, respectively, and ζ_a and ζ_b are redefined as the partial derivatives of their demand for money with respect to domestic interest rates, respectively.

Finally, the balance-of-trade equation in differentials and in terms of A's currency may be stated as:

$$(15) \quad t = i_b - i_a + I\bar{q}_a - I(\bar{q}_b + e).$$

The eleven equations (1), (2), (3), (4), or alternatively (3a) and (4a) as we have amended them, (7)-(10) and (13)-(15) should normally be sufficient to determine the eleven variables, d_a , d_b , \bar{q}_a , \bar{q}_b , i_a , i_b , r_a , r_b , and t . The variables m_a , m_b and e will be treated as exogenous policy variables. In particular, when we want to examine the effect of a devaluation on the trade balance, we shall determine the value of t in terms of e and the parameters when all the other dependent variables have adjusted to the new situation.¹³

¹³ It should be noted that substituting (15) into (1) and (2) in turn, we get:

$$(1') \quad t = q_a + Q_a\bar{q}_a - d_a$$

$$(2') \quad t = d_b - (q_b + Q_b\bar{q}_b)$$

Furthermore, by substituting (3) into (1') and (4) into (2'), we get:

$$(3') \quad t = \lambda_a q_a + \rho_a r_a$$

$$(4') \quad t = -\lambda_b q_b - \rho_b r_b$$

and similarly, by substituting (3a) into (1') and (4a) into (2') we get:

$$(3'a) \quad t = \lambda_a q_a + \rho_a r_a + \lambda_a I(\bar{q}_a - \bar{q}_b - e)$$

$$(4'a) \quad t = -\lambda_b q_b - \rho_b r_b - \lambda_b I(\bar{q}_b - \bar{q}_a + e).$$

These equations facilitate the solution of t in terms of e , i.e., the ascertainment of the effect of a small devaluation on the trade balance, which we shall presently proceed to do.

(1') and (2') indicate that the change in the trade balance must be equal to the change in the gap between national product and expenditure (absorption). (3') and (4'), or (3'a) and (4'a), further tell us that the improvement in the trade balance must equal the increase in hoardings, which are either income-induced, or interest-induced, or terms-of-trade-induced—the last mentioned item being shown only in (3'a) and (4'a). These equations, however, pro-

II. *Effect of a Devaluation*

A. *Internal Balance Assumed*

As pointed out above, the effect of a devaluation was examined by Meade only under the assumption of either a Keynesian neutral monetary policy or a monetary policy that assures internal balance. The assumption of a monetary policy that ensures internal balance for both countries concerned implies that q_a and q_b are both zero. With the additional assumption that money wages are given, \bar{q}_a and \bar{q}_b may also be taken as zero. Thus equations (9) and (10) may be dropped and the rest of the equations greatly simplified. The solution for t/e obtained from equations (1), (2), (7), (8) and (15) is:

$$(16) \quad \frac{t}{e} = \frac{dT}{dE} = \frac{(\pi_{ab} + \epsilon_{ab} - 1)I}{1 - \pi_a - \pi_b}$$

where

$$\pi_{ab} = \pi_a + \pi_b \quad \text{and} \quad \epsilon_{ab} = \epsilon_a + \epsilon_b.^{14}$$

The solution is different from the Marshall-Lerner formula in that it has a denominator of $1 - \pi_a - \pi_b$. This is solely due to the fact that the propensities to import are defined here with respect to aggregate expenditures instead of incomes, so that the effect on the demand for imports of changes in aggregate expenditures cannot be excluded even though incomes in both countries are, by assumption, kept constant.¹⁵

For stability of the exchange rate, it is necessary that t/e should be positive, i.e., that a devaluation should bring about an improvement in the balance of trade. Since the denominator $(1 - \pi_a - \pi_b)$ can normally be assumed to be positive, the stability-condition for the exchange rate is the same as that implied in the Marshall-Lerner formula, viz., that

vide only partial solutions for the effect of devaluation on the trade balance; for q_a , q_b , r_a , r_b , \bar{q}_a and \bar{q}_b will all be affected by e , and the total effect on t will depend on how they in their turn are affected. This is, however, as far as the absorption approach can carry us. To obtain a full solution for the effect of a devaluation, the elasticity approach must be called in.

¹⁴ From (1') and (2') in footnote 13 above, we can see directly that, when internal balance is maintained in both countries,

$$t = -d_a = d_b.$$

Substitute this result into (7), (8) and (15), we get the result (16).

¹⁵ It can be shown that when the propensities to import of both A and B are defined with respect to their respective money incomes, as is usually done, so that the import demand functions may be written as:

$$(7a) \quad i_a = \pi_a^* q_a + I(\pi_a^* + \epsilon_a)(\bar{q}_a - q_b - e)$$

and

$$(8a) \quad i_b = \pi_b^* q_b + I(\pi_b^* + \epsilon_b)(\bar{q}_b - q_a + e)$$

the denominator would disappear.

the sum of the elasticities of demand for imports in both countries (including both the income effect and the substitution effect) should be greater than unity.

Also note that under Meade's assumption of internal balance, the introduction of the terms-of-trade effect on aggregate expenditure would make no difference at all in the effect of a devaluation on the trade balance. In other words, substituting (3a) and (4a) for (3) and (4) in the above system of 9 equations would yield exactly the same solution for t/e as (16). This is because the additional effect on expenditure of a change in the terms of trade would be automatically compensated by monetary policy which is assumed to offset any tendency of deviation from full employment.¹⁶

Under such an implicit assumption of internal balance, the influence of monetary factors is not observable at all from the equation for the effect of a devaluation, because changes in monetary factors are assumed to happen implicitly. It is therefore rather uninteresting for the study of the rôle played by monetary factors.

B. *Keynesian Neutral Monetary Policy*

The alternative policy assumption made by Meade is that of a neutral policy combination, under which, in addition to the assumed absence of direct government efforts to influence imports, exports and domestic expenditures by commercial and fiscal policies, the domestic rate of interest is specifically assumed to be kept constant by the monetary authorities by maintaining the supply of money and credit infinitely elastic at the existing rate of interest. According to Meade, this neutral monetary policy is the type generally assumed in "what may be called Keynesian analysis." Indeed, it is tacitly taken for granted by all economists who apply the multiplier analysis to international trade without any explicit mention of monetary factors at all.

To distinguish this type of neutral monetary policy from the more orthodox type of neutral money policy, we shall call the former the Keynesian neutral monetary policy. The latter will be called the orthodox neutral monetary policy, which, in the absence of long-run growth of population and real productive capacity of the economy, may be described simply as the monetary policy that keeps the money supply of the economy constant.

When Keynesian neutral monetary policy is assumed for both countries A and B, r_a and r_b are *ex hypothesi* zero and equations for the demand for money, i.e., (13) and (14), can be omitted altogether in the solution for the change in the balance of trade t . Using Meade's own do-

¹⁶ In fact the solution (16) for t/e can be derived without reference to equations (3) and (4). The substitution of (3a) and (4a) for (3) and (4), respectively, merely affects the monetary changes that will be required for the maintenance of internal balance.

mestic expenditure functions, i.e., (3) and (4), together with the other seven equations (1), (2), (7)–(10), and (15), the result obtained is:

$$(17) \quad \frac{t}{e} = \frac{dT}{dE} = \frac{\lambda_a \lambda_b (\pi_{ab} + \epsilon_{ab} - 1) I}{\Delta_1},$$

where

$$(18) \quad \Delta_1 = \lambda_a \lambda_b \left\{ 1 + \frac{\pi_a (1 - \lambda_a)}{\lambda_a} + \frac{\pi_b (1 - \lambda_b)}{\lambda_b} + (\pi_{ab} + \epsilon_{ab} - 1) \left(\frac{\Pi_a}{\lambda_a \eta_a} + \frac{\Pi_b}{\lambda_b \eta_b} \right) \right\},$$

and Π_a and Π_b are the proportions of national expenditures (hence of national incomes, since with initial balance assumed to be zero, national incomes and expenditures are identical) initially spent on imports in countries A and B, respectively.¹⁷

Again the stability of the exchange rate requires that $t/e > 0$. However, since it is by no means unlikely that either one or both of the two propensities to hoard (i.e., λ_a and λ_b) should be negative, we need to be more specific about this stability condition. For it has been pointed out by Samuelson that for an equation system such as the nine equations (1)–(4), (7)–(10) and (15), to be dynamically stable, it is necessary that Δ_1 (which is the determinant of the system with the sign reversed) be positive too.¹⁸ Since it is impossible for the exchange rate to be stable when the whole system is dynamically unstable, we must conclude that it is necessary, for the stability of the exchange rate, that both (17) and (18) be positive.¹⁹ This is what Samuelson calls “the correspondence principle” which enables us to narrow down the necessary stability conditions in comparative static analysis with dynamic stability requirements.

¹⁷ The method of solution is simply successive substitution to eliminate all other variables than t and e . While the order in which these other variables are eliminated is quite immaterial, the particular procedure used was first to reduce the variables q 's, d 's, and i 's to expressions in terms of the q 's only, and then, making use of equations (3') and (4') in footnote 13, to solve for the q 's. Then t can be readily solved as $t = \lambda_a q_a$, using (3') in footnote 13 and assuming $r_a = 0$.

¹⁸ The number of equations being odd in this case, it is a necessary condition, for all the eigenvalues of the matrix of the system to be negative, that the determinant of the system be negative also [19] [20]. For an excellent lucid exposition of this principle, see also Baumol [4, pp. 373–78].

¹⁹ This point was glossed over by Meade, who, after canceling out $\lambda_a \lambda_b$ from both the numerator and the denominator, observed that the denominator (with $\lambda_a \lambda_b$ canceled out) “is certainly positive if $\epsilon_{ab} + \pi_{ab} > 1$, which we shall assume normally to be the case” [15, p. 50]. This point appears also to have been overlooked by Stuvell who, after obtaining a similar expression for the effect of a devaluation on the balance of payments, asserted that it is only the sign of the whole expression that matters for stability, regardless of the sign of the denominator. See [22, Ch. 4, esp. Math. App., pp. 233–35].

We shall leave for later discussion the more complicated cases where one or both of λ_a and λ_b might be negative, and for the time being concern ourselves with the simple case where they are both positive. As long as λ_a and λ_b are both positive, (17) and (18) will both be positive when $(\pi_{ab} + \epsilon_{ab} - 1) > 0$. In other words, the critical value for the sum of the elasticities of demand for imports in the two countries concerned is 1 in this Keynesian case of variable income, just as in the classical case of constant money incomes. The only difference is that the effect of devaluation will be much dampened by the changes in incomes and prices in both countries.

C. The Terms-of-Trade Effect

Let us now allow for the terms-of-trade effect upon aggregate expenditures by substituting equations (3a) and (4a) for (3) and (4) in the above system of nine equations. The solution for t/e then becomes:

$$(19) \quad \frac{t}{e} = \frac{dT}{dE} = \frac{\lambda_a \lambda_b (\epsilon_{ab} - 1) I}{\Delta_2}$$

where

$$(20) \quad \Delta_2 = \lambda_a \lambda_b \left\{ \left[1 + \frac{\pi_a(1 - \lambda_a)}{\lambda_a} + \frac{\pi_b(1 - \lambda_b)}{\lambda_b} \right] \left(1 + \frac{\Pi_a}{\eta_a} + \frac{\Pi_b}{\eta_b} \right) + (\epsilon_{ab} - 1) \left(\frac{\Pi_a}{\lambda_a \eta_a} + \frac{\Pi_b}{\lambda_b \eta_b} \right) \right\} .^{20}$$

Again Samuelson's correspondence principle would require that for the stability of the exchange market it is necessary that both (19) and (20) be greater than zero.

Again assuming for the time being that λ_a and λ_b are both positive, the crucial stability condition is now $(\epsilon_{ab} - 1) > 0$, i.e., the sum of the components of the pure substitution effect alone in the two elasticities of demand for imports must be greater than 1.

A comparison of (17) and (19) therefore confirms the findings of Harberger as well as Laursen and Metzler that when the effects of the terms of trade on aggregate expenditures are taken into consideration, the stability condition for the exchange rate becomes more stringent. The crucial stability condition implied in (19), when λ_a and λ_b are both assumed to be positive, i.e., $(\epsilon_{ab} - 1) > 0$, although apparently much simpler, is in fact identical to the stability conditions obtained by Harberger and Laursen and Metzler.²¹ This simpler form, however,

²⁰ The method of solution adopted here is again successive elimination, and the particular procedure is first to reduce the q 's, d 's, and i 's to expressions in terms of the q 's only and then solve for the q 's. The solution for t can then be obtained from those for q_a and q_b .

²¹ Harberger's stability condition is:

$$(\eta_1 + \eta_2) > (1 + c_1 + c_2),$$

shows more clearly the true magnitude of this bugbear, which, according to Laursen and Metzler, might require the crucial value of the sum of the two elasticities of demand for imports to "exceed unity by a considerable amount" [12, p. 296]. Equation (19) clearly shows that the result of allowing for the terms-of-trade effect on aggregate expenditures is merely to cancel out the components of the income effect in the crucial sum of the two elasticities of demand for imports. If the proportion of the national income spent on imports is high so that the terms-of-trade effect on expenditure may be expected to be of some significance, so also would be the income effect component in the elasticity of demand for imports which offsets it. Conversely, if the income effect component in the elasticity of import demand is negligible, then the terms-of-trade effect upon aggregate expenditure, that is supposed to cause difficulty, would also be of negligible significance. Therefore, the existence of the terms-of-trade effect upon aggregate expenditure is not likely to make the stability condition of the exchange rate so dangerously stringent as was at first suggested.

D. *Instability of the Keynesian Neutral Monetary Policy*

This observation about the significance of the terms-of-trade effect upon aggregate expenditure, however, is rather a digression from our main purpose in this paper, which is to achieve a synthesis of the elasticity and the absorption approaches and to highlight the role played by monetary factors. More pertinent to the main purpose of this paper are the following facts about the effect of a devaluation, as may be observed from (17) and (18) or (19) and (20):

1. It is impossible to dichotomize the effect of a devaluation into two clear-cut components, viz. a relative-price effect and an absorption or multiplier effect which constitutes a damping coefficient to the former; for as soon as we abandon the usual assumption of constant costs and prices of domestic products in both countries, the multiplier process

where η_1 and η_2 , the two elasticities of demand for imports, correspond to our $(\pi_a + \epsilon_a)$ and $(\pi_b + \epsilon_b)$, respectively; and c_1 and c_2 , the two propensities to import, correspond to our π_a and π_b , respectively. Thus his condition can be easily converted to our form, viz. $(\epsilon_{ab} - 1) > 0$ [7, p. 53, esp. fn. 13].

Laursen and Metzler's condition is given in the form:

$$\{(1 - w_1)(1 - w_2)v_1(\eta_1 + \eta_2 - 1) - s_1m_1(1 - w_2) - s_2m_2(1 - w_1)\} > 0,$$

where w_1 and w_2 are the propensities to spend, and hence $(1 - w_1)$ and $(1 - w_2)$ correspond to our λ_a and λ_b ; v_1 , the initial volume of imports (assumed to be the same for both countries), corresponds to our I ; η_1 and η_2 to our $(\pi_a + \epsilon_a)$ and $(\pi_b + \epsilon_b)$, respectively; m_1 and m_2 to our π_a and π_b , respectively; and s_1 and s_2 are partial derivatives of the aggregate expenditures with respect to the exchange rate for the two countries, respectively. In our notation, $s_1 = \partial D_a / \partial E$ and $s_2 = \partial D_b / \partial (1/E)$, which, according to equations (3a) and (4a) above, are respectively equal to $\lambda_a I$ and $\lambda_b I$. Thus written in our notation, Laursen and Metzler's condition becomes:

$$\{\lambda_a \lambda_b I (\pi_{ab} + \epsilon_{ab} - 1) - \lambda_a I \pi_a \lambda_b - \lambda_b I \pi_b \lambda_a\} = \lambda_a \lambda_b I (\epsilon_{ab} - 1) > 0,$$

which is exactly the same as implied in equation (19).

would again involve changes in relative prices and hence the relative-price effect on the trade balance.²² It is quite naive, therefore, to claim that the absorption approach is a superior new tool that could supersede entirely the relative-price approach.

2. The absorption approach is right in the case of a Keynesian neutral monetary policy in pointing out that unless there is a positive propensity to hoard in both countries, the balance of trade is unlikely to be stable even if the sum of the elasticities of demand for imports of the two countries is greater than 1. For if one of the propensities to hoard is negative while the sum of the elasticities of demand for imports is greater than 1, then (17) or (19) cannot be positive, when the necessary condition for the dynamic stability of the system is satisfied, i.e., when Δ_1 or $\Delta_2 > 0$.

If one of the propensities to hoard is zero, t/e would be zero, which implies that the effect of a devaluation would be zero. If both λ_a and λ_b are negative, it might seem that it is not impossible for both (17) and (18), or (19) and (20), to be positive as required for stability, and hence for the exchange rate to be stable, provided the absolute values of the negative λ_a and λ_b are large enough relatively to π_a and π_b , respectively, and η_a and η_b are also large. This is, however, illusory; for it must be remembered that Δ_1 (or Δ_2) > 0 is only a necessary condition for the dynamic stability of the system. By direct economic reasoning, it can be shown that there can be no stability for the system if the marginal propensities to spend in both countries are greater than 1. For with marginal propensities to spend greater than 1 and the supplies of money infinitely elastic at constant interest rates as assumed under the Keynesian neutral monetary policy, both countries would be unstable in isolation. It is therefore impossible that the two countries would become stable when joined together in mutual trade, since there is no possibility for the instability of the one being compensated by the stability of the other.²³

²² If we make the usual simplifying assumption that the elasticities of supply of products of A and B are both infinite, i.e., $\eta_a = \eta_b = \infty$, so that prices of domestic products will remain constant, then (19), for instance, can be simplified to:

$$(21) \quad \frac{t}{e} = \frac{\lambda_a \lambda_b (e_{ab} - 1) I}{\lambda_a \lambda_b + \pi_a (1 - \lambda_a) \lambda_b + \pi_b (1 - \lambda_b) \lambda_a}.$$

In this case, it is indeed permissible to say that the relative-price effect determines the initial change in trade balance to which a damping coefficient, determined by propensities to hoard and import is to be applied. Too often, however, analyses of the effect of a devaluation stop with such simple cases.

²³ There seems to be a possibility that, if one of the propensities to hoard is negative and at the same time the sum of the elasticities of demand for imports is smaller than its critical value, the necessary condition for the stability of the dynamic system as well as the exchange rate might be satisfied. I am not sure, however, whether the sufficient condition for dynamic stability can be satisfied by such a combination since I have not worked out fully the sufficient

In the actual state of affairs, it is not at all unlikely that the marginal propensity to hoard, in the sense of 1 minus the marginal propensity to spend (on both investment and consumption), should be zero or negative. Thus it would appear that the stability of the exchange rate and the balance to trade is frequently in a very precarious state, even if the sum of the elasticities of demand for imports is well above 1.

We shall soon see, however, that only under the Keynesian neutral monetary policy that eliminates all the stabilizing influences of monetary factors is the stability of the exchange rate so precarious. Under a different monetary policy, say, the orthodox neutral monetary policy, it would not be necessary at all for the stability of the exchange rate and the dynamic system that the propensity to hoard of either country be greater than zero.

3. Furthermore, even if the sum of the elasticities of demand for imports is well above 1 and the marginal propensities to hoard of both countries are greater than zero, the exchange rate would at best be in a sort of "indifferent" or "neutral" equilibrium under the Keynesian neutral monetary policy, as soon as full employment is reached in the devaluing country. For when full employment is reached in country A, η_a approaches 0 as a limit and equations (17) and (19) would also approach zero as a limit, i.e.,

$$\frac{dT}{dE} = \frac{t}{e} \rightarrow 0, \quad \text{as } \eta_a \rightarrow 0;$$

for Δ_1 and $\Delta_2 \rightarrow \infty$, as $\eta_a \rightarrow 0$. In other words, the effect of devaluation on the balance of trade would be zero.²⁴ Thus if a freely fluctuating exchange rate system is adopted in a country with full employment and a Keynesian neutral monetary policy, any slight chance imbalance in trade could cause violent depreciation of the currency as the exchange rate would be entirely indeterminate.²⁵

condition for dynamic stability. Furthermore it seems that in such cases, the relative speed of price and income adjustments will have to be taken into consideration.

²⁴ The fact that the other country is fully employed is not a menace to the stability of the trade balance and exchange rate for a devaluing country. For under full employment, the elasticity of aggregate supply is likely to take on different values according to the direction in which aggregate demand is changing. The elasticity of aggregate supply is zero when confronted with an increase in aggregate demand, but it is not likely to be zero when confronted with a decrease in aggregate demand, particularly when money wages in the country concerned are rigid. Since the aggregate demand for the products of the country whose currency has relatively appreciated is likely to fall, the relevant elasticity of supply of its products is not likely to be zero, even when it is enjoying full employment.

²⁵ So far we have assumed a balanced trade position as the starting point. It has been pointed out by A. O. Hirschman that if there is a trade deficit to start with, the necessary and sufficient condition for a devaluation to improve the balance of trade becomes easier to fulfill [9]. However, in a sense, the condition for $dT/dE > 0$, assuming no initial trade deficit, is still the basic stability condition; for if $dT/dE > 0$ only when there is an initial trade deficit, but < 0 when

4. So far we have abstracted from money-wage changes due to trade union pressure and speculative capital movements. We have reached the conclusion that a full-employment economy with a Keynesian neutral monetary policy would imply instability in the balance of trade and the exchange rate without taking into consideration the possibilities of a wage-price spiral and a destabilizing speculative capital movement.

When these possibilities are taken into consideration, the instability implied in the Keynesian monetary policy will certainly be aggravated. I have shown elsewhere [23] [24] that the Keynesian monetary policy—i.e., the pegging of the interest rate at a fixed level with an infinitely elastic supply of money—provides precisely the monetary condition that is most conducive to the generation of a cumulative (self-aggravating) speculative capital movement; and that the instability of the French franc due to speculative capital flights in the 'twenties, a case which has been much cited as the evidence of the inherent instability of a floating exchange rate system, was really made possible and stimulated by the French monetary policy at the time of pegging the interest rate on the large amount of floating debt then in existence and being issued. Those economists with a Keynesian inclination, who decry the traditional reliance on exchange rate adjustment to restore the balance of payments, often forget that one of the chief reasons why devaluation may fail to improve the balance of trade, particularly in the postwar world of full or overfull employment, is precisely the monetary policy which they either take for granted or are actively advocating.

E. Orthodox Neutral Money Policy

That monetary factors can play a vital stabilizing role in the exchange market can be clearly shown by substituting the orthodox neutral money policy as defined above for the Keynesian neutral monetary policy. Under the assumption of an orthodox neutral money policy, changes in money supply, i.e., m_a and m_b , may be put equal to zero, whereas interest rates would be permitted to change freely. The effect of a devaluation can then be obtained by solving the system of 11 equations, consisting either of (1)–(4), (7)–(10), and (13)–(15) or (1), (2), (3a), (4a), (7)–(10) and (13)–(15), for t in terms of e after putting m_a and m_b equal to zero.

The result obtained with the first set of equations, i.e., the set of

there is no initial deficit, then the country concerned may use devaluation to improve its balance of trade to some extent when it has an initial trade deficit, but it cannot use devaluation to eliminate its deficit; for when its deficit gets smaller, further devaluation may begin to have an adverse effect on its trade balance. If $dT/dE > 0$ when there is an initial deficit, but equals 0 when trade is balanced, then theoretically it is not impossible for the country eventually to eliminate its initial trade deficit by keeping on devaluing its currency. But once the trade deficit is eliminated, the momentum of devaluation may carry it further and further; for then the exchange rate becomes indeterminate (being in an indifferent equilibrium).

equations that do not allow for the terms-of-trade effect on aggregate expenditures, is:

$$(22) \quad \frac{t}{e} = \frac{dT}{dE} = \frac{\alpha\beta(\pi_{ab} + \epsilon_{ab} - 1)I}{\Delta_3}$$

where

$$(23) \quad \Delta_3 = \alpha\beta \left\{ 1 + \frac{\pi_a(1 - \alpha)}{\alpha} + \frac{\pi_b(1 - \beta)}{\beta} \right. \\ \left. + (\pi_{ab} + \epsilon_{ab} - 1) \left(\frac{\Pi_a}{\alpha\eta_a} + \frac{\Pi_b}{\beta\eta_b} \right) \right\}$$

$$(24) \quad \alpha = \lambda_a + \left(1 + \frac{1}{\eta_a} \right) \frac{\rho_a \xi_a}{\zeta_a}$$

and

$$(25) \quad \beta = \lambda_b + \left(1 + \frac{1}{\eta_b} \right) \frac{\rho_b \xi_b}{\zeta_b} .^{26}$$

Equations (22) and (23) are of exactly the same form as (17) and (18) respectively; the only difference is that in (22) and (23) α and β are substituted for λ_a and λ_b of (17) and (18). The terms α or β may be regarded as consisting of two components: First, there is the usual marginal propensity to hoard directly induced by real-income changes (viz., λ_a or λ_b , respectively). Secondly, we have the interest-induced marginal propensity to hoard brought about by changes in the interest rate resulting from changes in the demand for transaction balances in connection with changes in money income, viz.,

$$\left(1 + \frac{1}{\eta_a} \right) \frac{\rho_a \xi_a}{\zeta_a} \quad \text{or} \quad \left(1 + \frac{1}{\eta_b} \right) \frac{\rho_b \xi_b}{\zeta_b} ,$$

respectively. As long as the interest-elasticity of the demand for money is not infinitely large (in absolute value) and the interest elasticity of aggregate expenditure is not zero, the interest-induced marginal propensity to hoard is always positive. Moreover, if there is a practical limit to the velocity of circulation of money, ζ_a or ζ_b would approach zero as the limit of the velocity of circulation is gradually approached.

Thus unless we start from a position deep down in the liquidity trap, the second component is bound eventually to overwhelm the first, regardless of whether the latter is positive or negative. The danger of in-

²⁶ The procedure adopted here is again to reduce the q 's, r 's, d 's and i 's to expressions in terms of the q 's only and then solve for q_a and q_b . The solution for t is then obtained from those for q_a and q_b .

stability due to a negative propensity to hoard (or a greater than unity propensity to spend), which is after all quite a normal phenomenon, will, therefore, be quite under control if an orthodox neutral monetary policy is adopted instead of the Keynesian neutral monetary policy.

Furthermore, and what is more important for the current world, full employment at home need not imply instability in the balance of trade and the exchange rate. For when full employment is reached in country A, and hence η_a approaches zero, t/e would not approach zero as under the Keynesian neutral monetary policy. For equations (22)–(25) indicate that, as $\eta_a \rightarrow 0$,

$$(26) \quad \frac{t}{e} \rightarrow \frac{(\pi_{ab} + \epsilon_{ab} - 1)I}{1 - \pi_a + \frac{\pi_b(1 - \beta)}{\beta} + (\pi_{ab} + \epsilon_{ab} - 1) \left(\frac{\Pi_a \xi_a}{\rho_a \xi_a} + \frac{\Pi_b}{\beta \eta_b} \right)}$$

since

$$\alpha = \lambda_a + \left(1 + \frac{1}{\eta_a}\right) \frac{\rho_a \xi_a}{\xi_a} \rightarrow \infty, \quad \alpha \eta_a \rightarrow \frac{\rho_a \xi_a}{\xi_a}, \quad \text{as } \eta_a \rightarrow 0.$$

The limit for t/e as $\eta_a \rightarrow 0$ will be greater than zero as long as the primary stability condition $\pi_{ab} + \epsilon_{ab} > 1$ is fulfilled. Thus full employment at home and a marginal propensity to spend equal to or greater than 1 are no threat to the stability of the balance of trade and the exchange rate under an orthodox neutral money policy.²⁷

The introduction of the effect of terms-of-trade changes on aggregate expenditures would make no difference to the substance of the above conclusions. In addition it may be shown that the significance for exchange rate stability of the terms-of-trade effect on expenditure is less under an orthodox neutral money policy than under a Keynesian monetary policy. For by substituting equations (3a) and (4a) for (3) and (4) in the system and putting m_a and m_b equal to zero as before, we get

$$(27) \quad \frac{t}{e} = \frac{ab \left(\pi_{ab} + \epsilon_{ab} - 1 - \frac{\lambda_a \pi_a}{\alpha} - \frac{\lambda_b \pi_b}{\beta} \right) I}{\Delta_4}$$

where

$$(28) \quad \Delta_4 = \alpha \beta \left\{ 1 + \frac{\pi_a(1 - \alpha)}{\alpha} + \frac{\pi_b(1 - \beta)}{\beta} \right\}$$

²⁷ I have shown elsewhere [23, pp. 410–12] that so long as the interest elasticity of supply of money is zero (as is implied by the orthodox neutral monetary policy) and the interest elasticity of demand for money is fairly small, as it would be when the prevailing interest rate is well above the minimum set by the liquidity trap, it is highly unlikely that the speculative demand for foreign exchange will be unstable or self-aggravating.

$$+ \left[\pi_{ab} + \epsilon_{ab} - 1 + \lambda_a(1 - \pi_{ab}) - \frac{\pi_b(\lambda_a - \lambda_b)}{\beta} \right] \frac{\Pi_a}{\alpha\eta_a} \\ + \left[\pi_{ab} + \epsilon_{ab} - 1 + \lambda_b(1 - \pi_{ab}) - \frac{\pi_a(\lambda_b - \lambda_a)}{\alpha} \right] \frac{\Pi_b}{\beta\eta_b} \Bigg\}^{28}$$

Comparison of equation (27) with (22) again indicates that, as pointed out by Harberger, and Laursen and Metzler, if λ_a and λ_b are positive so that a worsening of the terms of trade has a stimulating effect on the aggregate spending of the country concerned, the terms-of-trade effect upon aggregate expenditure would make the stability condition for the exchange rate more stringent. On the other hand, comparison of (27) with (19) shows that the significance for exchange stability of the terms-of-trade effect on expenditure is clearly reduced under an orthodox neutral monetary policy. For whereas under the Keynesian neutral monetary policy the effect of the terms-of-trade changes on expenditure would exactly cancel out the income-effect components of the elasticities of demand for imports, thus making the stability condition $\epsilon_{ab} > 1$, under an orthodox neutral money policy it will normally fall short of doing this. Given that α and β are both positive, which is practically always ensured under such a monetary policy, the crucial stability condition for the balance of trade is now:

$$(29) \quad \left(\pi_{ab} + \epsilon_{ab} - 1 - \frac{\lambda_a\pi_a}{\alpha} - \frac{\lambda_b\pi_b}{\beta} \right) > 0.$$

Since α and β are normally greater than λ_a and λ_b , respectively, the influence of the terms-of-trade effect on expenditure will not be big enough to offset completely the income-effect components in the elasticities of import demands. Thus the terms-of-trade effect on expenditure appears to be a much exaggerated bugbear in the eyes of elasticity pessimists.

It also can be shown that under an orthodox neutral money policy full employment at home will cause no difficulty to exchange rate stability even if the terms-of-trade effect on expenditure is allowed for. For as $\eta_a \rightarrow 0$, equation (27) becomes:

$$(30) \quad \frac{t}{e} \rightarrow \frac{\left(\pi_{ab} + \epsilon_{ab} - 1 - \frac{\lambda_b\pi_b}{\beta} \right) I}{\Delta_5},$$

where

$$(31) \quad \Delta_5 = 1 - \pi_a + \frac{\pi_b(1 - \beta)}{\beta} + \left[\pi_{ab} + \epsilon_{ab} - 1 + \lambda_a(1 - \pi_{ab}) \right]$$

²⁸ The procedure adopted here is similar to the one used in the preceding case.

$$-\frac{\pi_b(\lambda_a - \lambda_b)}{\beta}] \frac{\Pi_a \zeta_a}{\rho_a \xi_a} + [\pi_{ab} + \epsilon_{ab} - 1 + \lambda_b(1 - \pi_{ab})] \frac{\Pi_b}{\beta \eta_b}.$$

When λ_a is positive, the stability condition implied in (30), i.e.,

$$\left(\pi_{ab} + \epsilon_{ab} - 1 - \frac{\lambda_b \pi_b}{\beta} \right) > 0,$$

is certainly fulfilled, when that implied in (27) is fulfilled.

When $\lambda_a < 0$, it implies that the terms-of-trade effect on expenditure in country A will give a boost to, instead of detracting from, the stability of the balance of trade. Equation (30) would then merely indicate that when full employment at home is attained, this possible boost to stability would disappear. In any case, the stability condition

$$\left(\pi_{ab} + \epsilon_{ab} - 1 - \frac{\lambda_b \pi_b}{\beta} \right) > 0$$

is not substantially different from the traditional Marshall-Lerner stability condition of $(\pi_{ab} + \epsilon_{ab} - 1) > 0$.²⁹

III. Concluding Remarks

We conclude that the absorption approach to the analysis of the effects of devaluation has contributed to our understanding of the problem only in emphasizing the fundamental facts that a positive trade balance implies the presence of hoarding (nonspending) of incomes or credit contraction and that a negative trade balance implies the presence of dishoarding or credit expansion, and that a more comprehensive analysis, including in particular an analysis of the effect on income and expenditure, is needed than is implied in the classical elasticity approach. As an independent analytical tool, in substitution for the tra-

²⁹ In fact a comparison of (22) and (23) with (17) and (18), or of (27) and (28) with (19) and (20), shows that the dampening influence of income variation on the effect of a devaluation is generally reduced by the adoption of an orthodox, instead of a Keynesian, neutral monetary policy.

In the extreme case, where the interest elasticity of demand for money is zero in both countries (i.e., $\zeta_a = \zeta_b = 0$, which implies that the velocities of circulation of money are constant in both countries), α and β would approach infinity. Then (22), (26), (27) and (30) would all become the same as (16); i.e.,

$$\frac{t}{e} = \frac{(\pi_{ab} + \epsilon_{ab} - 1)I}{1 - \pi_a - \pi_b},$$

which is the solution we obtained under the assumption of internal balance in both countries (see above p. 923).

Thus the neglect of the dampening influence of income variation by the neoclassical economists is probably due partly to their customary assumption of zero interest elasticity of demand for money (or constant velocity of circulation of money). Alexander's characterization of the neoclassical elasticity approach as pure tautological theorizing is, therefore, quite unjustified.

ditional elasticity approach, however, it is quite inadequate; for we have shown that not only is the primary effect of a devaluation determined by the elasticities, but the secondary damping factor also depends on the relevant elasticities; once domestic prices are recognized as liable to change with the changes in income.

The significance of monetary factors, the role of which is clearly indicated by the fundamental identity of the absorption approach, is however entirely obliterated by the usual assumption of constant interest rates supported by infinitely elastic supply of or demand for money with respect to the interest rate, an assumption explicitly or implicitly made in practically all modern Keynesian analyses. Such a monetary assumption, however, would imply instability in the exchange rate as soon as full employment is reached at home, even without allowing for the destabilizing influence of speculative capital movements and the possibility of a wage-price spiral. To take for granted such a monetary policy may have been justified in the deep depression years of the 'thirties, but it is hardly appropriate in the current world of prosperity and high-level employment.

It is high time that we abandoned this ubiquitous underlying assumption in our aggregate analysis lest we should scare ourselves out of our own wits in "discovering" dangerous instability lurking everywhere in our economy (notably for example, the supposed razor-edge instability of our growth path) and thus clamor for more and more government controls on our economic life.

REFERENCES

1. S. S. ALEXANDER, "Effects of a Devaluation on a Trade Balance," *Internat. Mon. Fund Staff Papers*, Apr. 1952, 2, 263-78.
2. ———, "Effects of a Devaluation: A Simplified Synthesis of Elasticities and Absorption Approaches," *Am. Econ. Rev.*, Mar. 1959, 49, 23-42.
3. W. R. ALLEN, "A Note on the Money Income Effect of Devaluation," *Kyklos*, 1956, 9, 372-80.
4. W. J. BAUMOL, *Economic Dynamics*, 2nd ed. New York 1959.
5. H. BREMS, "Devaluation, A Marriage of the Elasticity and Absorption Approaches," *Econ. Jour.*, Mar. 1957, 67, 49-64.
6. A. J. BROWN, "Trade Balances and Exchange Stability," *Oxford Econ. Papers*, No. 6, Apr. 1942, 57-75.
7. A. C. HARBERGER, "Currency Depreciation, Income and the Balance of Trade," *Jour. Pol. Econ.*, Feb. 1950, 58, 47-60.
8. ———, "Pitfalls in Mathematical Model Building," *Am. Econ. Rev.*, Dec. 1952, 42, 856-65.
9. A. O. HIRSCHMAN, "Devaluation and Trade Balance—A Note," *Rev. Econ. Stat.*, Feb. 1949, 31, 50-53.
10. H. G. JOHNSON, "Towards a General Theory of the Balance of Payments," *International Trade and Economic Growth*, London 1958, Ch. 6.

- 10A. ———, "The Taxonomic Approach to Economic Policy," *Econ. Jour.*, Dec. 1951, 61, 812-32.
11. R. W. JONES, "Depreciation and the Dampening Effect of Income Changes," *Rev. Econ. Stat.*, Feb. 1960, 42, 74-80.
12. S. LAURSEN AND L. A. METZLER, "Flexible Exchange Rates and the Theory of Employment," *Rev. Econ. Stat.*, Nov. 1950, 32, 281-99.
13. F. MACHLUP, "Relative Prices and Aggregate Spending in the Analysis of Devaluation," *Am. Econ. Rev.*, June 1955, 45, 255-78.
14. ———, "The Terms of Trade Effects of Devaluation upon Real Income and the Balance of Trade," *Kyklos*, 1956, 9(4), 417-52.
15. J. E. MEADE, *The Balance of Payments, Mathematical Supplement*. London 1951.
16. M. MICHAELY, "Relative Prices and Income Absorption Approaches to Devaluation: A Partial Reconciliation," *Am. Econ. Rev.*, Mar. 1960, 50, 144-47.
17. I. F. PEARCE, "A Note on Mr. Spraos' Paper," *Economica*, May 1955, N.S. 22, 147-51.
18. J. ROBINSON, "The Foreign Exchanges," *Essays in the Theory of Employment*, New York 1937, Pt. III, Ch. 1, reprinted in *Readings in the Theory of International Trade*, ed. H. S. Ellis and L. T. Metzler, Philadelphia 1949, pp. 83-103.
19. P. A. SAMUELSON, "The Stability of Equilibrium: Comparative Statics and Dynamics," *Econometrica*, Apr. 1941, 9, 97-120.
20. ———, *Foundations of Economic Analysis*. Cambridge 1953.
21. J. SPRAOS, "Consumers' Behaviour and the Conditions for Exchange Stability," *Economica*, May 1955, N.S. 22, 137-47.
22. G. STUVEL, *The Exchange Stability Problem*. Oxford 1951.
23. S. C. TSIANG, "A Theory of Foreign Exchange Speculation under a Floating Exchange System," *Jour. Pol. Econ.*, Oct. 1958, 66, 399-418.
24. ———, "Floating Exchange Rate System in Countries with Relatively Stable Economies: Some European Experience After World War I," *Internat. Mon. Fund Staff Papers*, Oct. 1959, 7, 244-73.
25. W. H. WHITE, "The Employment-Insulating Advantages of Flexible Exchange Rates: A Comment on Professors Laursen and Metzler," *Rev. Econ. Stat.*, May 1954, 36, 225-28.

DIFFERENTIAL CHANGES IN THE PRICES OF CONSUMERS' AND CAPITAL GOODS

By R. A. GORDON*

This paper is concerned with some of the implications of a phenomenon which seems largely to have escaped the attention of all but a few economists. There has apparently been, for half a century or more, a secular tendency in the United States and some other countries for capital-goods prices to rise faster than those of consumers' goods.

If we can believe the figures, the contrast in the behavior of these sector price levels has been quite striking, particularly for the period since the 1920's. The contrast also shows up in earlier decades in the U.S. figures. The tendency for capital-goods prices to rise faster than those of consumers' goods is not confined to the United States. It is also evident in some, although not all, other advanced countries for which data are available.

These differential price trends raise a number of significant questions, of which the most important are probably the following: (1) To what extent do we have here a real phenomenon, and to what extent are we dealing merely with a statistical illusion resulting from defects inherent in the available price indices? (2) If we have to accept these differential trends as actually existing, how do we account for them? (3) What are the more important economic implications of such differential price behavior, if in fact it exists—for example, for multiplier analysis, the relation between capital and output, etc.? (4) And, finally, if it is argued that these differential price trends are largely a statistical illusion, what does this imply regarding the actual growth of output and the capital stock and about the past behavior of prices? The "real" variables we derive from the national income accounts are merely estimates of money expenditures deflated by the price indices that have shown these different trends. To deny the existence of these differential price trends is to deny the validity of the deflated estimates of the components of the GNP on which we all so heavily rely.

The present paper will have something to say about each of these questions. But first of all we shall examine the evidence that suggests that these differential price trends do exist.

*The author is professor of economics, University of California, Berkeley. Financial assistance from the Institute of Business and Economic Research at that institution is gratefully acknowledged. I have also had the benefit of helpful suggestions from friends and colleagues, both at Berkeley and elsewhere. The list of names is too long to include here.

I. *What the Data Show*

Table 1 presents the relevant data for the United States. Kuznets' implicit price deflators for consumers' goods and for fixed capital formation, as well as for total gross national product, are shown in the

TABLE 1—PRICE DEFLATORS FOR COMPONENTS OF GROSS NATIONAL PRODUCT, UNITED STATES, 1869-1959*
(1929=100)

Period	Price Deflators for				Ratio: P_t/P_o (1929=100)
	Consumers' Goods (P_c)	Gross Fixed Capital Formation ^b (P_k)	Government Expenditures (P_g)	GNP (P)	
Kuznets:					
1869-78	69.8	54.0	—	67.5	77.4
1879-88	55.9	46.9	—	54.5	83.9
1889-98	49.0	41.4	—	47.3	84.5
1899-1908	53.2	48.4	—	52.3	91.0
1909-18	71.1	64.3	—	70.1	90.4
1919-28	102.5	101.1	—	102.9	98.6
1929-38	82.8	92.6	—	84.2	111.8
1939-48	109.8	128.3	—	112.7	116.8
1944-53	139.4	172.3	—	145.4	123.6
Commerce:					
1929	100.0	100.0	100.0	100.0	100.0
1939	79.9	95.4	96.5	83.8	119.5
1949	144.0	189.2	185.8	153.7	131.4
1959	176.0	262.0	264.6	196.2	148.9

* Source: The decade averages for 1869-1953 are from Simon Kuznets, *Supplement to Summary Volume on Capital Formation and Financing*. Part B. *Estimates for Overlapping Decades, 1869-1953*. (National Bureau of Economic Research, n.d., mimeographed). The annual Department of Commerce estimates are taken from the *Economic Report of the President*, January 1961. In the case of the Kuznets figures, I derived the deflators by dividing his estimates for each component in current prices by the corresponding ones in constant prices. The Department of Commerce presents its implicit deflators on a 1954 base, and these were converted to a 1929 base. Since no separate deflator was given for fixed capital formation but only for construction and producers' durables separately, I added the estimates for these latter two components in both current and constant prices and divided one by the other to secure the implicit price deflator for the sum of the two. This procedure was also followed with Kuznets' estimates for construction and producers' durables.

^b Includes construction and producers' durable goods but excludes net change in inventories and foreign investment. Kuznets' figures in this column include government construction; those of the Department of Commerce do not.

form of decade averages for the period 1869-1953. In addition, we present the deflators of the Department of Commerce—including that for government expenditures—for selected years since 1929.¹

¹ In the case of both the Kuznets and Department of Commerce data, we have excluded net change in inventories and net foreign investment from the capital formation esti-

If we can believe these price indices, the upward trend in the ratio of capital-goods prices (P_k) to those of consumers' goods (P_c) goes back as far as Kuznets has carried his data. The upward trend in this ratio seems to have accelerated from about the first world war on, and particularly after the 1920's. If we confine our attention to this century, the rise in the ratio was particularly marked in the decade 1899-1908, during and immediately following the first world war, during the 1930's, and after the second world war. The movement in the ratio of P_k to P_c for the entire period since the 1870's is traced out in Figure 1.

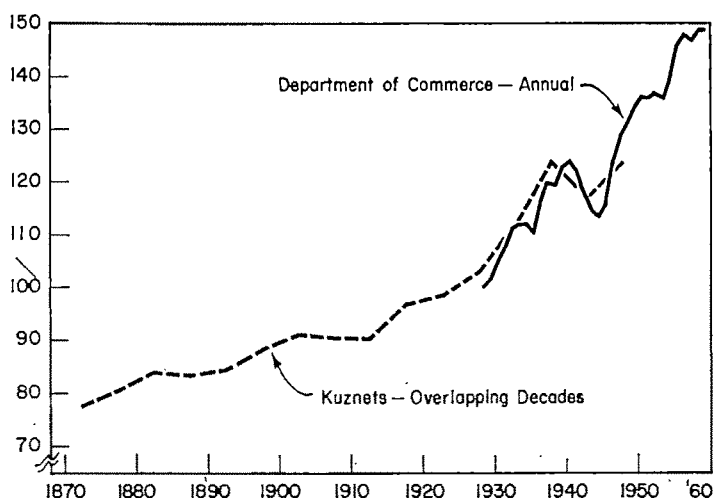


FIGURE 1. RATIO OF PRICE DEFLATOR FOR FIXED CAPITAL FORMATION TO THAT FOR CONSUMERS' GOODS, 1869-1959 (1929 = 100)*

* For description and source of data, see text and Table 1.

The cumulative effect of these differential price trends is substantial. If the figures are to be believed, capital goods were about 50 per cent more expensive in terms of consumers' goods in 1959 than they were in 1929, and about 75 per cent more expensive, relatively, than in the 1890's.

These differential trends are not merely a phenomenon of generally inflationary periods. Thus the ratio of P_k to P_c tended to rise whether the trend in the general price level was upward or downward. The marked rise in the ratio during the depression of the 'thirties is particularly to be noted; relatively it was even greater than during the decade of the 1950's.

mates. Thus "fixed capital formation" refers to the sum of construction and producers' durable goods. The fact that government construction is included in Kuznets' estimates of capital formation but is included in the Commerce estimates of government expenditures seems to make little difference, since, for the period for which they overlap, the two sets of deflators for capital goods are quite close together. See Figure 1.

The phenomenon with which we are concerned is not confined exclusively to the United States. Thus for four countries with long price series (Table 2), the ratio of P_k to P_c displays an upward trend for a number of decades before the second world war.² Since the 1930's, experience has varied. Other OEEC countries, in addition to the 4 listed in Table 2, also show divergent trends since the 1930's and particularly since the war. In this respect, Table 3 is of some interest for the recent information it provides. During 1953-59, the ratio of P_k to P_c rose in

TABLE 2—RATIO OF CAPITAL-GOODS PRICES TO CONSUMERS' GOODS PRICES IN FOUR COUNTRIES FOR VARIOUS PERIODS SINCE 1870*

United Kingdom (1929=100)		Canada (1929=100)		Sweden (1913=100)		Denmark (1929=100)	
1870-79	87	1870	88	1873	92	1870-79	74
1890-99	84	1890	95	1897	101	1890-99	73
1924-33	103	1939	110	1926	110	1921-29	103
1946-52	150	1953	127	1938	127	1930-39	121
				1948	109	1947-52	123

* In all cases, the figures represent the ratio of the price deflator for capital goods to that for consumers' goods, with the base year indicated taken as 100. Where necessary, the deflators were computed by dividing estimates in current prices by those in constant prices. Data for the United Kingdom and Denmark are, respectively, from J. B. Jefferys and Dorothy Walters, "National Income and Expenditures of the United Kingdom, 1870-1952," and Kjeld Bjerke, "The National Product of Denmark, 1870-1952," both in International Association for Research in Income and Wealth, *Income and Wealth*, Series V (London, 1955). Canadian figures are from O. J. Firestone, *Canada's Economic Development, 1867-1953*, International Association for Income and Wealth, *Income and Wealth*, Series VII (London, 1958), p. 178. The Swedish figures are from O. Johannsson, "Economic Structure and Growth in Sweden, 1861-1953," paper presented at the Sixth European Conference of the International Association for Research in Income and Wealth in 1959 (mimeographed).

only four of the ten European countries listed—Belgium, Germany (by only a small amount), The Netherlands, and Norway.³ In none was the differential quite as large as in the United States or Canada. Another striking feature of the table is the extent to which the price deflator for government services in all countries has risen faster than that for private consumption. As a result the total GNP deflator rose substantially more than that for private consumption in most countries. The particular multiplier effects of differential price trends described in section IV of this paper hold for government expenditures as well as for private capital formation.

² Kuznets' data show a secular rise in the ration of P_k to P_c in Norway also. However, the ratio declined in Italy (1861-1955) and showed no appreciable rise in Germany before 1913. Further information on differential price trends in other countries has been compiled by Kuznets [10, pp. 13-15]. European data for 1938-1955 are available in [13].

³ The number would have been larger had we gone back to, say, 1947 or 1938. See the OEEC data in [13].

The P_k/P_c series for the United States plotted in Figure 1 seems to reveal the kind of intermediate secular movement associated particularly with the name of Simon Kuznets. Thus we can discern in Figure 1 a "long swing" from the early 'seventies to the 'nineties, another from the 'nineties to the first world war, a third from 1909-18 to 1919-28 or 1924-33, and a final one ending in the second world war. So far as I can make out from a quick comparison with Kuznets' latest data, the swings in P_k/P_c correspond very roughly in timing with those in GNP until the 1920's, but not after that. Beyond this, there does not seem to be any particularly close relation to the swings in capital formation shown in Kuznets' latest data [9, Ch. 7]. But investigation of these

TABLE 3—PERCENTAGE CHANGES IN IMPLICIT PRICE INDICES FOR GNP COMPONENTS, SELECTED COUNTRIES, 1953-59*

Country	Private Consumption	Public Consumption	Gross Capital Formation	GNP
Austria	12.8	37.0	7.9	18.4
Belgium	8.9	25.0	15.7	13.0
Denmark	16.2	28.3	12.6	21.5
France	33.5	48.6	26.2	34.3
Germany	11.9	19.4	12.4	14.6
Italy	8.7	23.1	6.2	9.8
Netherlands	16.6	39.8	22.4	21.4
Norway	15.8	31.4	25.5	19.6
Sweden	16.7	26.9	12.2	16.8
United Kingdom	16.5	34.0	16.2	20.6
Canada	11.1	30.9	19.9	16.2
United States	9.6	23.6	17.8	13.6

* Source: William Fellner *et al.*, *The Problem of Rising Prices* (OEEC, Paris, 1961), pp. 113-15.

long swings is a task that must be left to others. Our primary interest is in the long-run trend that underlies these shorter movements.

At least since 1929, the price level associated with government expenditures in the United States has risen as rapidly as the prices of capital goods. (See Table 1.) Thus the price level associated with total nonconsumption expenditures has risen far more than that associated with private consumers' spending. Table 3 suggests that the same sort of development has also been occurring in other countries, at least in recent years. The dynamic implications of these differential price trends will be considered later in this paper.

II. A Statistical Illusion?

Now we have to ask our first main question: May not these differential price trends be largely a statistical illusion? Widespread concern has been expressed in recent years about the upward bias inherent in

official price indices. Is this upward bias, by the nature of the case, particularly characteristic of index numbers of capital-goods prices, so that we must discount all or most of the difference in price trends evident in Table 1 and Figure 1?

To deal with this question, we must differentiate between the two components of gross (fixed) capital formation: producers' durable goods and construction. The chief reason for suspecting marked upward bias in the price indices is different for these two categories. In the case of producers' durables, we have the kind of quality problem that has been extensively discussed in the recent literature. Producers' durable goods are generally highly fabricated; specifications change over the years, usually in such a way as to improve the quality of the product; and new products are constantly being introduced. Recorded prices are not adjusted for this improvement in quality. Hence the rise in price per quality unit (or per efficiency unit, since we are talking about capital goods) is less than the rise in price per physical unit as ordinarily measured.

An additional problem arises in the case of construction. While the quality problem as defined above also presents difficulties in the case of buildings, more serious is the fact that most indices of construction costs are primarily indices of input prices, not output prices. So-called construction-cost indices are typically averages of wage rates and building-material prices with fixed weights. Usually little or no allowance is made for increased productivity of the input factors.⁴ Hence such an index does not measure the change in the actual cost (price) of a particular type of building. Instead, it measures changes in what such a building *would have* cost if it had always required the same amount of labor and materials.⁵

Let us consider first the question of productivity trends in construction and the resulting relationships between input prices and the actual costs of completed buildings. The evidence that I have examined suggests that the available construction-cost indices probably do not exaggerate the long-run upward trend in actual building costs as much as is frequently assumed. While some of the rise almost certainly has to be discounted, there are substantial reasons for believing that, over the

⁴ Allowance for improvements in productivity does get into some of the construction-cost indices, particularly those of the Bureau of Public Roads and the Interstate Commerce Commission. The Department of Commerce [19, pp. 90-92] also reports that some adjustment for productivity changes is incorporated in some of the private building-cost indexes.

⁵ For a recent discussion of the limitations of current index numbers of construction costs, see Appendix B of the report of the "Stigler Committee" [15, pp. 87-93]. See also Appendix E of Kendrick's study referred to in footnote 27, which appeared only after this paper was completed.

last half century or more, actual costs of construction have risen more than the prices of, for example, consumers' goods. The more important evidence in support of this conclusion is as follows:

1. One study [6, pp. 344-58] found that a specially constructed index of actual house prices rose by about the same amount as a residential construction-cost index over the period 1890-1934.

2. A completely independent study by Colean and Newcomb [3, pp. 71-73, 247-48] found that the *Engineering News-Record* fixed-weight index of building costs rose no more during the period 1913-51 than an average of the indices of *actual* building costs compiled by four construction firms.

3. Prices of building materials, particularly lumber, have risen significantly more than the index of all wholesale prices, and it is unlikely that all of this differential increase in prices has been offset by savings in the use of materials.

4. There is good reason to believe that, over the last half century or more, the recorded rise in union wage rates in the building trades—the wage component in most fixed-weight construction-cost indices—does not seriously exaggerate the rise in unit labor costs, except in heavy engineering projects. Labor productivity in building construction has apparently risen relatively slowly over most of the period covered by our figures, and the trend in union wage rates understates the rise in actual hourly earnings.⁶

5. Improvements in productivity have been retarded by union restrictions and building regulations. Also, some "external diseconomies" have been at work. Thus one factor in the rise in building costs has been "the rapidly increasing complexity of the urban environment resulting from greater concentration of population on the one hand and higher standards of health and safety on the other" [3, p. 62].

6. Where extensive mechanization has been introduced, some of the resulting labor saving has been offset by an increase in cost per unit of output for such items as interest, depreciation, fuel and power, etc. [14, pp. 52-53].

7. Raymond Powell [14, pp. 46-47], after a careful survey of the evidence for the United States (largely from the same sources that we have cited), reaches the following conclusion:

... there has been little divergence in the *trends* of input and output prices in residential and nonresidential building construction in the U.S. over the periods covered. In railway and highway construction, on the

⁶ Colean and Newcomb [3, p. 69] cite an estimate by the American Appraisal Company that actual labor costs on several types of building in 1948 were 600 to 700 per cent of their 1913 levels for the same type of work. This was more than the rise in wage rates in the same period.

other hand, Chawner's comparisons [2] suggest a long-term fall in product prices relative to input prices. . . . Taken together, these findings suggest some downward trend in output prices relative to input prices for construction as a whole. . . .

As Powell goes on to point out [14, p. 47], the Department of Commerce uses the ICC and Bureau of Public Roads deflators, which do allow for improvements in productivity in railroad and road construction. Yet the Department of Commerce index for construction as a whole, which includes these "output-price" deflators for railroad and road construction, does not diverge significantly from a simple input-price deflator. "The obvious explanation is that building construction, in which the trends of input and output prices appear to have been similar, account for the greater part of total construction. . . ."

Although all of this does not constitute proof, it does suggest that the differential trend in construction costs cannot be completely discounted. While the implicit deflator for construction is more a measure of input than of output prices, some limited allowance for productivity changes has been made in recent decades; and, as explained in the preceding paragraphs, there are a number of reasons for believing that, over the past half century or more, an index of input prices does not so seriously overstate the rise in building costs (apart from heavy engineering projects) that we must dismiss the entire difference in trends shown in Table 1 and Figure 1.⁷

Now we must return to the more intractable problem of quality changes in the final product, in the case of both producers' durables and construction. Granted the story told by the price indices, may not the differential increases in prices of capital goods be largely or completely offset by quality improvement, so that the price per efficiency unit has not increased relative to the prices of consumers' goods?⁸

Although we cannot provide a satisfactory quantitative answer to this question, it is clear that there have been substantial quality improvements in capital goods, particularly in those that we call pro-

⁷ We have confined our discussion entirely to long-run trends. There is little question that the weaknesses in construction-cost indices usually cited do make these indices more inflexible in the short run than is the case with actual building costs.

⁸ This question might be broken into two parts. First, do quality improvements directly explain the differential rise in capital-goods prices, in the sense that the real cost of making these improvements has been greater than that of making the improvements that have occurred in consumers' goods? Second, even if the actual cost of making the improvements does not fully explain the differential rise in capital-goods prices, nonetheless might not the differential price rise have been offset by the increased productivity of capital goods? Technical advance can improve the quality of a product even though additional resources are not invested in it. I have serious doubts that a price index should try to allow for the second type of quality change.

ducers' durables. There is no doubt that the increased dearness of capital goods relative to consumers' goods has been at least partially offset by quality improvements. As we shall see in the next section, however, the differential rise in capital-goods prices is due chiefly, although not exclusively, to the marked upward trend in construction costs, and it may be that improvements in the quality (productive efficiency) of capital in the form of construction have not fully compensated for the differential rise in building costs. (This may help to explain the increase in the ratio of producers' durables to construction that we shall note at a later point.) It may well be, however, that the relative cost per efficiency unit of producers' durable goods has fallen sufficiently to offset the possible rise in the relative cost per efficiency unit of construction.

Our findings regarding the increasing relative dearness of capital goods, as these goods are conventionally measured, suggest that more work on the changing quality characteristics of the capital stock is badly needed. What we think we now know about trends in the ratio of real investment to real income, in the capital-output ratio, and in other significant economic relationships depends upon the use of deflating indices which make no allowance for quality improvements. If such an allowance were made, these trends would be different from those that we now observe.

Merely to recognize that a problem exists is as far as we can carry the question of quality changes in this paper. Our purpose thus far has been merely to demonstrate that, *as conventionally measured*, real investment has been becoming more expensive in terms of consumers' goods. Once this is established, then an important question for further investigation has to do with the extent to which this increased relative dearness has been offset by the increased efficiency per unit of real capital as conventionally measured.

III. Price Trends in Construction and Producers' Durables

A modest amount of disaggregation provides a further basis for evaluating the significance of the apparent relative rise in the price of capital goods. At this point we may profitably turn to Table 4. While the relatively rapid rise in construction costs accounts for a large part of the secular rise in the ratio of P_k to P_c , this is not the whole story.⁹ In this connection it is convenient to divide the entire period since 1869 into three subperiods:

1. During the period of falling prices from 1869-78 to the 1890's,

⁹ Kuznets [10, p. 42] points out that construction costs have risen more rapidly than prices of producers' durables in other countries as well as in the United States.

TABLE 4—PRICE DEFLATORS FOR COMPONENTS OF FIXED CAPITAL FORMATION
AND CONSUMERS' EXPENDITURES, 1869-1959^a
(1929 = 100)

	Consumers'				Producer' Durables	Con- struction
	Perishables	Semi- durables	Durables	Services		
Kuznets:						
1869-78	74.1	75.5	68.1	63.1	75.0	47.9
1879-88	57.6	58.7	49.3	55.7	53.4	44.6
1889-98	50.6	48.2	41.4	51.5	43.7	40.8
1899-1908	54.2	51.3	47.4	55.2	50.4	47.6
1909-18	75.1	70.1	66.7	69.1	73.1	59.7
1919-28	102.5	118.6	104.7	98.2	103.1	99.9
1929-38	81.1	84.4	87.1	89.5	91.0	93.8
1939-48	113.5	132.4	120.7	105.9	123.9	135.0
1944-53	147.0	173.5	153.8	130.6	154.0	200.9
Commerce:						
1929	100		100	100	100	100
1939	79.4		81.0	81.6	94.1	93.5
1949	157.5		150.8	125.1	165.7	202.2
1959	183.7		171.3	168.3	231.0	281.1
Percentage Change:						
1869-78 to 1889-98	-31.7	-36.2	-39.2	-18.4	-41.7	-14.8
1889-98 to 1919-28	102.6	146.1	152.9	90.7	135.9	144.9

^a These deflators were taken from the same sources, and derived in the same way, as those presented in Table 1.

the behavior of construction costs entirely accounts for the increase in our price ratio.¹⁰ Producers' durables fell in price more than any of the categories of consumers' goods shown in Table 4 (see the next-to-the-last line of the Table). This was in striking contrast to the relative behavior of the price index for producers' durables after 1929.

2. From the 1890's to the 1920's, a different pattern emerges. Dur-

¹⁰ If construction costs had changed in exactly the same way as the prices of producers' durables, the ratio of P_c to P_d for selected dates would have been as follows (1929 = 100):

1869-78	107.4
1889-98	89.2
1919-28	100.6
1959	131.3

These figures can be compared with the actual ratios of P_c to P_d in the last column of Table 1. The actual increase in the ratio from the 1890's to 1959 was about 75 per cent; in the hypothetical case above it is 47 per cent.

ing this period, the most marked contrast seems to have been between semidurables and all kinds of durables (including construction), on the one hand, and perishables and services, on the other. (See the last line of Table 4.) Construction costs rose relatively slightly more than the index for producers' durables, but the contrast is not as marked as during the period after 1929. Prices of consumers' semidurables rose as much as construction costs. The index for consumers' durables rose somewhat more than that for construction and, interestingly, it also increased more than that for producers' durables. This was in marked contrast to the period after 1929.

Thus it seems to have been the perishables and services that held down the deflator for consumers' expenditures during the first 30 years of this century.¹¹ Part of the contrast may have resulted from the fact that the durables are more highly fabricated and present more serious index-number problems because of changes in quality and introduction of new products. (Yet the deflator for semidurables rose as much as that for producers' durables or construction.) My guess is that not all of this differential price behavior can be explained away by defects in the underlying data and in the index numbers. If this is so, we can conclude that the behavior of construction costs alone accounts for only a small part of the difference in trend between P_k and P_c in the 30 or 40 years preceding 1929.¹²

3. The story is somewhat different for the period after 1929 (Table 4). The rise in construction costs between 1929 and 1959 was considerably greater than in the prices of producers' durables. Further, the latter rose much more than prices of consumers' durables, which was not the case before 1929. The increase in prices of consumers' durables was of the same order of magnitude as that in the prices of nondurables and services.

Here again, the explanation of these differences in trend is not obvious. With respect to construction costs, what we said in an earlier section is probably sufficient. The more rapid rise in the deflator for construction is not simply a statistical illusion resulting from deficiencies in the underlying costs indices. Further, the particularly rapid rise in building costs stems from the large increase in both building-material prices and unit labor costs, the latter resulting from the association of wage increases and a relatively slow improvement in productivity.

The contrast in the price trends for producers' and consumers' dur-

¹¹ It should be added that the price deflator for services before the first world war is particularly suspect.

¹² If construction costs had risen at exactly the same rate as the producers'-durables deflator, the ratio of P_k to P_c would have increased by 13 per cent between 1889-98 and 1919-28, instead of by the 17 per cent shown in Table 1.

ables is more puzzling. Some of the factors involved are probably those which the staff of the Joint Economic Committee considered in its massive study on *Employment, Growth, and Price Levels*. It may be surmised that a combination of factors caused the prices of producers' durables to rise more rapidly—relatively faster increases in unit labor costs because productivity increases offset less of the rise in wages, greater market power by sellers (on the average) than in the consumers' durable industries, possibly stronger upward demand pressures during some parts of the period, and possibly some additional direct and indirect influence on producers' durable prices from government military buying.¹³ To repeat, this is merely surmise, based on inadequate investigation of the available data. We have said enough, however, to establish our main finding: the rapid rise in the ratio of P_d to P_c after 1929 was due not only to the relatively rapid rise in building costs but also to the fact that prices of producers' durables rose much faster than those of consumers' durable or nondurable goods.¹⁴

Another point may help to throw some additional light on these differential price trends. Taken as a whole, the capital goods sector is more labor-intensive than that for consumers' goods.¹⁵ If we have a situation in which, in all industries, unit labor costs rise relatively faster than other costs per unit (this differential rise being the same in all industries), then product prices will rise most in those industries which are most labor-intensive. This sort of development, involving a general increase in labor's share, may have played some role in creating our differential price trends during parts of the total period that we have considered. A brief study of Schultze's figures [17] for the period since 1947, however, suggests that this has probably not been an important factor in the postwar period. Rather, both the wage and nonwage elements in unit prices have, on the whole, risen relatively more in con-

¹³ It has also been suggested to me that since the 1920's a number of consumers' durables (e.g., household appliances) have been in the stage of their growth curves that brought substantial internal and external economies. This may have been less true of producers' durables generally—in part because they are not produced on such a mass-production basis, in part because a good many branches of the machinery industry are relatively old. (Note in Table 4 the relatively good behavior of producers'-durable prices before 1929.) It may also be that in the last few decades quality improvements have had more of an effect on prices of producers' durables than on those of consumers' durables. The reader will also note that the relatively poor behavior of the producers'-durable deflator is not merely a postwar phenomenon. From 1929 to 1939, it declined as little as construction costs and much less than any of the deflators for consumers' expenditures.

¹⁴ Thomas Wilson [20] has presented a useful analysis of the postwar increase in machinery prices.

¹⁵ This is suggested both by an industry breakdown of labor's share, based on Department of Commerce national income data, and by an examination of Schultze's study of postwar costs and prices [17].

struction and (probably) in producers' durables than in the private economy taken as a whole.¹⁶

IV. *Some Implications*

In considering some of the analytical implications of these differential price trends I shall concentrate on the effect of these trends on the relation between investment and aggregate demand—i.e., on the multiplier. Some of the other possible implications of the differential behavior of P_k and P_c will be considered briefly at the end of this section.

Consider the bearing of our differential price trends on the consumption function and multiplier. First, we deal with the comparative statics case. Let $P_{k,0}$, $P_{c,0}$ and P_0 all be equal to 1 in a base year. Now we assume that in the given year, $P_{k,1} > P_1 > P_{c,1} > 1$. That is, prices of capital goods have risen more than those of consumers' goods between year 0 and year 1. The basic income identity in year 0, with all prices assumed to be unity, is, as usual:

$$Y = C + I.$$

But in year 1, this income identity in money terms becomes:¹⁷

$$P_1 Y = P_{c,1} C + P_{k,1} I.$$

Now let us assume that real consumption is a given proportion, a , of real income in year 0 and that the same consumption function holds in year 1. How do we write the consumption function in the latter year? Money income in period 1 is $P_1 Y$; but, from the point of view of consumers, real income in period 1 is not Y but

$$\frac{P_1 Y}{P_{c,1}}.$$

Therefore, it is apparent that we must write the consumption function in year 1 as:

$$C = a \frac{P_1}{P_{c,1}} Y.$$

Thus for any level of real income, Y , as usually defined, real consumption will be higher the higher the ratio of P to P_c , and P is nothing

¹⁶ For durable manufacturing as a whole, the gross return to capital per unit of output rose much more relatively than did unit labor cost and about twice as fast as in the entire nonfarm business sector [17, p. 50].

¹⁷ For the present argument, it does not matter whether the real magnitudes, Y , C , and I change between the two years or not. Hence I have not used time subscripts for these variables. Also, although I am assuming differential price increases, the argument is perfectly general and applies to either upward or downward changes.

more than a weighted average of P_k and P_c . Thus, for any year, dropping our year subscripts,

$$(1) \quad C = a \frac{P}{P_c} Y$$

where the P 's are measured relative to some base year.

At first blush, this seems a somewhat paradoxical result. We started out to define the consumption function in real terms, and we seem to have wound up defining it in money terms, since equation (1) can also be written

$$P_c C = aPY$$

and this says plainly that money expenditures are a constant fraction of money income.

The answer to our paradox is that the familiar Keynesian function, $C = aY$, holds in *both* real and money terms if P_c and P are always identical. No matter how much the price level changes, the propensity to consume is the same in both money and real terms as long as the sector price levels move perfectly in step.¹⁸ A problem arises only if P and P_c diverge.

If they do diverge, then consumers' real income can change either because of a change in Y or because of a change in the ratio P/P_c . In equation (1), we are simply assuming that either source of a change in consumers' real income in terms of consumers' goods will have the same effect on consumption.¹⁹ In the conventional formulation, the income effect of a differential price change is ignored.

It can be seen immediately what the introduction of sector price levels does to the multiplier. If we take the identity:

$$PY = P_c C + P_k I,$$

by substituting equation (1) we have:

$$\begin{aligned} PY &= P_c \left(a \frac{P}{P_c} Y \right) + P_k I \\ &= aPY + P_k I \end{aligned}$$

and

$$(2) \quad Y = \frac{P_k}{P} \left(\frac{I}{1-a} \right).$$

Thus, without a change in the propensity to consume in real terms, the output multiplier rises in proportion to P_k/P . Let us call this particular price ratio \bar{p} in our subsequent discussion.

¹⁸ Assuming, of course, that the change in the price level itself has no independent effect on consumption.

¹⁹ The existence of differential price trends raises some other questions about the consumption function that we shall have to ignore. One has to do with the wealth effects on consumption resulting from a changing ratio to P_k to P .

Although this is an obvious conclusion, it is a significant one once we accept the fact that capital-goods prices—or, for that matter, the price of government services—may behave quite differently from those for consumers' goods.²⁰ Consider, for example, the following important question. Was private gross capital formation, which is potentially the most unstable component of aggregate demand, a significantly smaller fraction of GNP in 1959 than in 1929? The larger this fraction, all other things equal, the greater the instability inherent in the U.S. economy.

As Table 5 brings out, the answer we get differs markedly depending on whether we use 1929 or 1959 prices. In constant (1929) prices, gross private domestic capital formation fell from 15.5 per cent of GNP in 1929 to 11.5 per cent in 1959, whereas in current prices there was very little decline. Correspondingly, consumers' expenditures as a

TABLE 5—SHARES OF MAJOR COMPONENTS IN GNP, IN CONSTANT AND CURRENT PRICES, 1929 AND 1959^a

GNP Components	Percentage of GNP When Components Are Measured in			
	Current Prices		1929 Prices	
	1929	1959	1929	1959
Consumers' Expenditures	75.7	65.1	75.7	72.6
Gross Domestic Capital Formation	15.5	14.9	15.5	11.5
Government Expenditures	8.1	20.1	8.1	14.9
Gross National Product	100.0	100.0	100.0	100.0

^a The original data are from *Economic Report of the President*, January, 1961. The minor component of net exports is omitted.

percentage of GNP fell from 75.7 to 65.1 if we measure in current prices, but only to 72.6 if we measure in 1929 prices. The rise in the share of government was much greater if measured in current prices than if measured in 1929 prices. Thus the rise in the share of government seems to have been chiefly at the expense of consumers if we measure in current prices and chiefly at the expense of capital formation if we measure in 1929 prices. Which is the better way of making these comparisons?

The answer is that we can make these comparisons either way, but each implies the use of a different multiplier. The reason for this has

²⁰ This point has been mentioned in passing by a few writers, for example, Hicks [8, p. 130], who have recognized that such divergence in price movements may arise during cyclical booms. But, in general, the problem has been ignored, particularly with respect to longer-run effects; Kuznets, of course, is an exception. Meade's recent two-sector model [12] does not pay particular attention to the kind of multiplier problem discussed in the text. Salter [16] considers relative changes in capital-goods prices only from the point of view of production theory.

been suggested by the earlier analysis, but a simple illustration may help. A recent study [4, p. 762] suggests that with the price and other conditions prevailing in 1957 the short-run recession multiplier was about 1.34. Assume that, in 1957 prices, capital formation was approximately 15 per cent of GNP. Then a 10 per cent decline in investment would have caused GNP (in 1957 prices) to decline by about 2 per cent.²¹

But suppose we had been measuring in 1929 prices and that, measured in these prices, investment was only 11.5 per cent of GNP (i.e., the same as the 1959 percentage shown in Table 5). If we now ask: if investment declines by 10 per cent what will be the decline in GNP, we must modify the multiplier used in the preceding paragraph by the ratio of P_k to P (on 1929 as a base). This ratio in 1959 was close to 1.35. Letting Y and I stand for GNP and investment in 1929 prices, the relative decline in Y resulting from a 10 per cent decline in investment (where the latter is 11.5 per cent of Y) is given by:

$$\Delta Y = (.10)(.115Y)(1.35 \times 1.34) = .02Y.$$

This is the same result that we obtained when we measured the variables in 1957 prices, but in this case we have had to multiply the multiplier used previously by the ratio of P_k to P . Thus it is misleading to emphasize the postwar decline in the relative importance of investment when measured in constant prices unless we recognize that the postwar multiplier (reflecting postwar price relationships) must be adjusted upward for the rise in the ratio of P_k to P . We all know that the automatic stabilizers have reduced the short-run multiplier below its prewar value. But it is not so generally recognized that part of this stabilizing change has been offset by the rise in the ratio of P_k to P .²² This is simply because the money income generated by a given physical quantity of capital goods will, unless offset by higher taxes or savings, buy more consumers' goods now than before the war.

The effect of these differential price trends can be further illustrated by reference to a simple type of Harrod-Domar model. Assume an accelerator, v , so that we can write:²³

$$(3) \quad \frac{dY}{dt} = \frac{I}{v}.$$

This gives us the increase in real output resulting from current real

²¹ Let \bar{Y} represent the GNP in 1957 prices. Then

$$\Delta \bar{Y} = (.10)(.15 \bar{Y})(1.34) = .02\bar{Y}.$$

²² This point has been discussed briefly by Bert Hickman [7, pp. 183-84].

²³ For the purpose of this discussion we ignore the fact that v is unlikely to remain constant if \bar{p} is changing. We also ignore the possibility that there might be different v 's for the capital-goods and consumers'-goods sectors.

investment. We assume now that P , P_c , and P_k are each a function of time. They are price index numbers, on a common base year, and we assume that the movement of each through time is independently determined. In accordance with equation (2), the multiplier effect of investment on income will be influenced by the ratio of P_k to P (which we call \bar{p}). Thus we have:

$$Y = \frac{\bar{p}I}{1-a}$$

or, substituting s for $(1-a)$,

$$(4) \quad Y = \frac{\bar{p}I}{s}$$

Differentiating with respect to time, we can express the increase in demand for real output as:

$$(5) \quad \frac{dY}{dt} = \frac{1}{s} \left(\bar{p} \frac{dI}{dt} + I \frac{d\bar{p}}{dt} \right).$$

Setting (3) equal to (5), which is the condition for an equilibrium rate of growth, and simplifying, we get:

$$(6) \quad \frac{1}{I} \frac{dI}{dt} = \frac{1}{\bar{p}} \left(\frac{s}{v} - \frac{d\bar{p}}{dt} \right).$$

We should like to be able to express (6) in terms of an equilibrium rate of growth of Y rather than I . If we divide (5) by (4), we see that:

$$(7) \quad \frac{1}{I} \frac{dI}{dt} = \frac{1}{Y} \frac{dY}{dt} - \frac{1}{\bar{p}} \frac{d\bar{p}}{dt}$$

so that by substituting (7) into (6) we wind up with:

$$(8) \quad \frac{1}{Y} \frac{dY}{dt} = \frac{s}{\bar{p}v}.$$

It will be recalled that the Harrod-Domar equilibrium rate of growth is simply s/v . Equation (8) tells us how much this expression has to be modified for relative changes in the sector price levels. If, as has been the case in the past in the United States, P_k rises relative to P , so that \bar{p} increases, then the equilibrium rate of growth will decline because we must divide by an increasing \bar{p} . Further, as we see from a comparison of (6) and (8), the equilibrium rates of growth are different for I and Y , despite our assumption of a constant s . A changing \bar{p} , so that

$$\frac{d\bar{p}}{dt} \neq 0,$$

is responsible for this result.

Thus, if P_k is rising relative to P_c and therefore to P , the equilibrium rate of growth will be less than that given by the Harrod-Domar formula. And the lower the equilibrium rate of growth, the stronger are the expansionary forces working on the economy; the less likely is Harrod's natural rate to be below the warranted rate; and the less likely is it that the increases in productive capacity created by current capital formation will exceed the increases in demand created by the growth of current investment.

All this can be summarized as follows: if P_k is rising faster than P_c and therefore P , a constant (marginal and average) propensity to consume, in the sense defined previously, will cause consumption, when measured in constant prices, to become a rising fraction of real income, and *a fortiori* real investment will become a diminishing fraction of real income. Something of this sort has been happening in the United States and a number of other countries. To cite Kuznets' figures for this country [10, p. 14, and 9, Ch. 3], the ratio of gross capital formation to GNP, when both are taken in current prices, displays something close to a horizontal trend from the closing decades of the nineteenth century to the 1950's. When measured in 1929 prices, however, there is a significant decline. This is clearly a highly significant fact. It raises again the question to which we could give no clear answer before: have there been quality improvements to offset the differential rise in the price of capital goods and the resulting decline in the ratio of gross capital formation to GNP?²⁴

This brings us to another issue, with which we can deal only very briefly. It is unrealistic to assume, as we did in our simple growth model, that the capital-output ratio is independent of the relative dearth or cheapness of capital goods. Given an aggregate production function, a rise in the ratio of P_k to P , everything else remaining the same, can be viewed as having either of two equivalent results. We can say either that the marginal return on the replacement cost of a given amount of real capital declines or that, with an unchanging marginal return on real capital valued at constant prices, the cost of using a unit of real capital has increased.²⁵ Whichever way we view the situa-

²⁴ The same kind of problem arises with respect to the relative rise in the price of government services.

²⁵ We can restate this conclusion as follows. If, to take the simplest case, we have an aggregate production function $Y = F(K, L)$, and if with constant prices

$$\frac{\partial F}{\partial K} = r$$

in equilibrium, where r is the gross rental per unit of real capital, then if P_k and P are changing at different rates, so that \bar{P} is changing, we must write

$$\frac{\partial F}{\partial K} = r\bar{P}.$$

In equilibrium the marginal physical product of capital will need to rise with \bar{P} if r does not change, and this implies a lower ratio of K to L . (Here and elsewhere I ignore the

tion, the cost of capital has increased relative to its productivity; and, if other factor prices are unchanged, this should lead to attempts to economize in the use of capital, either by substituting labor for capital with a given state of technology or by inducing the kind of technological change that will make real capital more productive.

The cost of using capital depends, of course, on the interest rate and the rate of depreciation as well as on the price of capital goods. Even with their recent rise, interest rates have shown a net decline since the 1920's; depreciation rates, on the other hand, have undoubtedly risen. I have not tried to make any estimates of the rise in total costs per unit of capital. It seems reasonable to assume, however, that the total cost of using a unit of real capital, as well as the price of capital goods, has been rising faster than the price of consumers' goods.²⁶

Whatever the rise in capital costs, it is clear that money wages have increased much more.²⁷ As Salter points out [16, p. 36], the mere fact of technological change makes it inevitable that capital-goods prices should fall relative to money wages, although we are still left with the puzzle that, relative to wages, consumers'-goods prices have fallen relatively more. In any event, even after allowing for the rise in capital-goods prices, the trend in relative factor prices has still been such as to induce a substitution of capital for labor, but not as strongly as would have been the case had our differential price trends not existed.

Actually, we know from Kuznets' data [9, Ch. 3] that the ratio of capital to labor in the United States has been increasing, although at a retarded rate since 1929. The rise in this ratio has been associated with a rise in labor productivity and in real wages, although recent studies suggest that the increase in output per man-hour is due more to technological change (broadly interpreted) than to the increasing amount of capital per worker [1] [5] [18]. Presumably the rise in the ratio of capital to labor would have been even greater had it not been for the rise in P_k relative to P . The rise in the price ratio may have affected the capital-labor (and capital-output) ratio in two ways. As suggested in the last section, it has tended to reduce the supply of "real" savings,

complication introduced by the possibility that the rise in p may be anticipated wholly or in part. I doubt that such (long-run) price anticipations play much of a role, particularly in view of the uncertainty created by technological change.)

²⁶ Salter, in his illuminating study of technical change [16, p. 37], offers some interesting figures on the rise in capital costs in the United States between 1930 and 1950 for capital equipment of different degrees of durability. During this particular interval, the marked decline in interest rates offset the relative rise in capital-goods prices sufficiently so that the cost of using capital equipment with a life of 20 years or more did not rise more than the price index for consumers' goods. Where the durability was less than 20 years, the rise in capital cost was greater than that in P_c . Since 1950, of course, interest rates have risen considerably.

²⁷ Here again Salter [16, p. 37] offers some interesting comparisons. See also the valuable study by John W. Kendrick, *Productivity Trends in the United States* (Princeton, 1961), particularly Ch. 5. This volume appeared only after the present paper had gone to press.

i.e., the purchasing power of savings in terms of capital goods. Second, it has, as indicated in the preceding paragraphs, increased the cost of acquiring real capital. The joint result presumably has been to keep the capital-output and capital-labor ratios from rising as rapidly as they might otherwise have done.

The effect of the differential price changes discussed in this paper has probably also affected the composition of the capital stock. Thus the decline in the share of construction in gross capital formation over the last half-century or more may be due in part to the particularly rapid rise in construction costs, although other factors were almost certainly more important.²⁸

Here are a range of considerations that deserve further study. We have said enough, however, to suggest that these differential price trends, if they are not merely a statistical illusion, may have had some effect on the rate of growth and the composition of the capital stock, the character of technological change, the ratio of capital to output and to labor, and possibly other significant economic variables.²⁹

V. Implication If Price Trends Are "Illusory"

Now we come to the final question raised at the beginning of this paper. Some readers may be prepared to argue that, despite the evidence submitted, most of the rise in the ratio of P_k to P_c is illusory. If they are correct, an uncomfortable conclusion follows. We should stop defeating current-price estimates of the GNP components by price deflators that show these "illusory" price trends.

We cannot have our cake and eat it too. If capital-goods prices have not been rising relatively as rapidly as the deflators suggest, then we should stop using these deflators. To argue that there has been no significant rise in the ratio of P_k to P_c over the last half-century or so is also to argue that the widely-used constant-dollar estimates of capital formation contain a significant downward bias. Conclusions drawn from such biased estimates are obviously suspect. The skeptic who refuses to accept the fact of these differential price trends must also apply his skepticism to the estimates of real-capital formation which he has probably used on more than one occasion.

REFERENCES

1. M. ABRAMOVITZ, *Resource and Output Trends in the United States Since*

²⁸ The declining share of construction has been discussed by Kuznets [9, Ch. 4]. Elsewhere [11, pp. 291-92] I have dealt briefly with the other factors involved besides the relative rise in construction costs.

²⁹ Only after the first draft of this paper was completed did I see J. E. Meade's new study [12]. In a lengthy appendix he develops a two-sector growth model in which the ratio of P_k to P_c is made an endogenous variable in the system, depending on the relative rates of technological progress in the capital-goods and consumer-goods sectors, on labor's share in the two sectors, and on the proportionate change between the real wage rate and the amount of profit per unit of real capital.

- 1870, National Bureau of Economic Research Occasional Paper 52. New York 1956.
2. L. J. CHAWNER, "Construction Cost Indexes as Influenced by Technological Change and Other Factors," *Jour. Am. Stat. Assoc.*, Sept. 1935, 30, 561-76.
 3. M. L. COLEMAN AND R. NEWCOMB, *Stabilizing Construction: The Record and Potential*. New York 1952.
 4. J. DUESENBERY, O. ECKSTEIN, AND G. FROMM, "A Simulation of the United States Economy in Recession," *Econometrica*, Oct. 1960, 28, 749-809.
 5. S. FABRICANT, *Basic Facts on Productivity Change*, National Bureau of Economic Research Occasional Paper 63. New York 1959.
 6. L. GREBLER, D. M. BLANK, AND L. WINNICK, *Capital Formation in Residential Real Estate*. Princeton 1956.
 7. B. G. HICKMAN, *Growth and Stability of the Postwar Economy*. Washington 1960.
 8. J. R. HICKS, *A Contribution to the Theory of the Trade Cycle*. Oxford 1950.
 9. S. KUZNETS, *Capital in the American Economy: Its Formation and Financing*. National Bureau of Economic Research, in press.
 10. ———, "Quantitative Aspects of the Economic Growth of Nations: VI. Long-Term Trends in Capital Formation Proportions," *Econ. Develop. and Cult. Change*, July 1961, 9, No. 4, Pt. II (entire issue).
 11. E. LUNDBERG, ED., *The Business Cycle in the Post-War World*. London 1955.
 12. J. E. MEADE, *A Neo-Classical Theory of Economic Growth*. London 1961.
 13. ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION, *Statistics of National Product and Expenditure, No. 2, 1938 and 1947 to 1955*. Paris 1957.
 14. R. P. POWELL, *A Materials-Input Index of Soviet Construction, 1927/28 to 1955*. Pt. I. RAND Corporation Research Memorandum RM-1872. Santa Monica 1957.
 15. PRICE STATISTICS REVIEW COMMITTEE, "The Price Statistics of the Federal Government," printed in *Government Price Statistics*, Hearings before the Subcommittee on Economic Statistics of the Joint Economic Committee, 87th Cong., 1st sess., Part I, January 24, 1961.
 16. W. E. G. SALTER, *Productivity and Technical Change*. Cambridge, Eng., 1960.
 17. C. L. SCHULTZE, *Prices, Costs, and Output for the Post War Decade: 1947-1957*. C.E.D. Suppl. Paper. New York 1959.
 18. R. M. SOLOW, "Technical Change and the Aggregate Production Function," *Rev. Econ. Stat.*, Aug. 1957, 39, 312-20.
 19. U.S. DEPARTMENTS OF COMMERCE AND LABOR, *Construction Volume and Costs, 1915-1956*, Stat. Suppl. to *Construction Review*, Vol. 3. Washington, D.C., n. d.
 20. T. A. WILSON, *An Analysis of the Inflation in Machinery Prices*, Study Paper No. 3 in Joint Economic Committee, *Study of Employment, Growth, and Price Levels*, 86th Cong., 1st sess., 1959.

THE ELASTICITY OF THE MARGINAL EFFICIENCY FUNCTION

By LORIE TARSEIS*

Economists who believe monetary policy to be relatively ineffective frequently base their views upon the alleged inelasticity of the function of the marginal efficiency of capital.¹ "Since the late 1930's," to quote James Duesenberry, "there has been a general tendency to suppose that investment is relatively insensitive to the interest rate" [9, p. 49]. And Paul Samuelson, accounting for this belief, states [16, p. 267]: "We used to think interest was too unimportant a cost to have much influence on short-lived projects; that in respect to long-lived projects it would be swamped by the larger factor of subjective uncertainty about the distant future." It is true that opinion now seems to be shifting [16] but there is no question about the base from which the shift is occurring.

The inelasticity of the marginal efficiency function is said to be confirmed by empirical observation and explained by theory. This is clearly a powerful team to contest. But the empirical evidence has recently been questioned [18] [19]. And the theoretical arguments which purport to explain why the function is relatively inelastic seem to be less than watertight; at least that will be the contention of this paper.

The tone of the paper is obviously critical, but that is because it seems clear that the question of the function's elasticity can only be answered by measurement; moreover, significant measures will not be obtained until there is a clearer picture than we at present have of the influence of various factors upon the function and its elasticity.

We begin with the assumption of the profit-maximizing firm, facing a perfect capital market, and operating in an environment in which factor costs, demand for product, and technology are subject to change.

* The author is professor of economics at Stanford University. He is grateful to his colleagues, Kenneth Arrow, Donald Bear, Bagicha Minhas, Marc Nerlove, and Edward Shaw, for helpful suggestions. The work was done while the author held a Ford Faculty Research Fellowship.

¹ Their claim may, of course, find support in other factors, such as the liquidity trap, or the activities of important nonregulated financial institutions, or in the contention that investment decisions are based upon motives other than profit maximization. Moreover, their claim is at times based upon the inadequacy of monetary measures to cure a slump or to contain inflation. In this paper I shall not be concerned with these other, perhaps more important, matters.

At the beginning we shall also assume that although the expectations held by businessmen may differ, each businessman nevertheless has complete confidence in the accuracy of his own appraisal of the future.

In regard to a particular investment project—whether it be to increase inventories, undertake repairs, replace equipment, initiate the construction of new plant, or to secure new machines—the sponsor can be supposed to entertain expectations as to the additional returns ($Q_1, Q_2 \dots Q_n$) it will provide in each period, $1, 2 \dots i \dots n$, over its life, the returns in each period depending upon the expected additions in that period both to his sales receipts and to his costs, appropriately measured.² The present value of the expected additional returns, or “increments” as we shall call them, can be made equal to the cost of the project itself ($= S$) at the appropriate rate, r , so that

$$S = \sum_1^n \frac{Q_i}{(1+r)^i}.$$

This rate (r) represents the project's expected percentage yield over cost (hereafter referred to as the yield) or the marginal efficiency of that project.³

On our assumptions, each project whose marginal efficiency or expected yield exceeds the interest rate will be undertaken, whether the excess is small or large. Accordingly, the amount of investment spending committed for any period will amount to what must be paid in that period in order to embark upon or carry forward every such project.⁴

In computing the marginal efficiency neither interest charges nor allowances for depreciation are to be subtracted as costs; or if they are, the rule for determining whether a project is worth while has to be stated differently. Since the conventional rule is convenient we shall apply it.⁵

Projects, of course, differ in such objective features as the industries in which they are located and many others, and so do businessmen in

² Any scrap value the investment item may have at the end of its operating life should be included in the estimate of Q_n .

³ It has been pointed out that if one or more of the Q 's is negative there may be several positive solutions for r .

⁴ Problems of interdependence will exist when the expected yield on one project depends upon whether the firm which has it up for decision is going ahead with another. For instance the firm may be unable to carry on efficiently more than a certain number (or dollar value) of projects in a given period; or the firm may find it worth while to undertake a project today which will contribute only indirectly by allowing the firm to hold a share of the market which another project, to be undertaken when technology is improved, can hope to exploit with greater success.

⁵ This, of course, does not mean that the firm would avoid paying interest, or that it should overlook depreciation in accounting for profit.

their optimism as they appraise the future and in their capacity to oversee investment projects. For these reasons, among others, we should expect differences in the marginal efficiencies attributed to the various projects. Project A may be expected by its sponsor to yield 30 per cent on its cost, and B, say, 10 per cent by its sponsor, the difference reflecting either a difference in objective circumstances—for instance the relatively high possibility of B's being rendered obsolete by impending technical improvements—or a difference in the character of the sponsor. Hence the amount, in both physical and value terms, of investment projects which are expected to yield at least 30 per cent will be lower than the corresponding figure for projects expected to yield at least 10 per cent; and so on. The marginal efficiency function will be less than perfectly elastic, simply because for different projects, specific marginal efficiencies also differ.⁶

The elasticity of the function depends upon the character of the distribution of the marginal efficiencies of all projects. If the marginal efficiency of most projects should lie between 10 per cent and 8 per cent and if their respective sizes are random with respect to these yields, the function would be decidedly elastic within that range, and quite inelastic for lower rates of interest. If instead, the prospective yields on the various projects are distributed uniformly over a very wide range, say between 100 per cent and 1 per cent, the elasticity of the function will be high at high rates of interest and low at low rates of interest. In order, then, to establish a sound quantitative estimate of the elasticity of the function, it would be necessary to learn about the distribution of the marginal efficiencies for all projects.

It seems doubtful whether most of the empirical results presented

⁶ Keynes accounts for the fact that the function is less than perfectly elastic on quite different grounds [12, p. 136]:

If there is an increased investment in any given type of capital during any period of time, the marginal efficiency of that type of capital will diminish as the investment in it is increased, partly because the prospective yield will fall as the supply of that type of capital is increased, and partly because, as a rule, pressure on the facilities for producing that type of capital will cause its supply price to increase; the second of these factors being usually the more important in producing equilibrium in the short run, but the longer the period in view the more does the first factor take its place.

Clearly these phenomena play a role in the real world. However, since the latter becomes important only as capacity operations are approached in the industries that produce investment goods, and the former only after sufficient time has passed to permit significant additions to capacity, his short-run function would tend when competition is perfect to be infinitely elastic over a wide range. As a result, if investment were taking place at all, its level would be close to the capacity of the investment-goods industry—assuming firms also borrowed in perfect markets—and the economy would have only two positions of stable equilibrium—one with investment zero and hence deep depression and the other with investment very high and hence high prosperity. But actually the forces to which Keynes draws attention really have to do with the position of the (*ex ante*) investment function not its elasticity.

up to now have shed much light upon this question.⁷ In the case of studies based on interviews, the one important exception to this judgment is the kind of information obtained by Erik Lundberg⁸ [14]; but it has not, apparently, been used to throw light upon the elasticity of the aggregate function or of the various less aggregative functions that comprise specific classes of investment projects.

The other method of empirical investigation, the econometric, should be more promising. Unfortunately, it is difficult to take the results seriously at this stage. The elasticity has been shown to be positive in some studies [13] [15, p. 188],⁹ and in others to be negative, and evidence for almost any value in between could doubtless be compiled. The results, in fact, appear to be very sensitive to the model chosen, and to the data and procedures used. But despite the wide differences found, there is the general belief, already noted, that the function has been observed to be inelastic.

Three characteristics of investment projects are usually cited as explanations for the inelasticity of the marginal efficiency function. First, the sponsors of long-lived projects would, it is claimed, be far more responsive to changes in the interest rate than would be the sponsors of projects that have a short life; hence the marginal efficiency function will be relatively inelastic when short-lived projects are in question and relatively elastic when the projects are long-lived. Secondly, the sponsors of projects whose returns are uncertain, will according to this claim also be relatively unresponsive to changes in the interest rate, and such projects will on the whole have a long life; hence because of riskiness, the marginal efficiency function for long-lived projects will also tend to be inelastic. Finally, with corporate profits taxed at a marginal rate of, say, 50 per cent, there is a third and decisive reason, so it is claimed, for expecting the marginal efficiency function to be inelastic.

It is maintained in this paper that none of these claims is valid, and that neither the shortness of projects' lives, their exposure to risk, nor the existence of high tax rates will necessarily render the marginal efficiency function inelastic, or indeed less elastic than it would have been had their lives been longer, had they been riskless, and had their returns not been subject to taxes. This, of course, does not mean that we should expect the function to be elastic, but only that what have

⁷ In particular, findings that businessmen pay little attention to the interest rate—or say they don't, anyway—in deciding whether to undertake projects, and findings that they regard other parameters as far more important than the interest rate in determining the yield anticipated from a particular project, are of very little use.

⁸ He notes [14, p. 669] "the greatest dispersion in the expected internal rate of return (before tax) of planned investment projects," which suggest a low elasticity of the marginal efficiency function, at least at low interest rates.

⁹ These results are, quite properly, rejected by the authors.

appeared to be convincing grounds for expecting it to be inelastic are not really convincing at all.

I. *Short-lived and Long-lived Projects and Elasticity*

In discussions of the elasticity of the marginal efficiency function, it is frequently asserted that a great deal depends upon whether projects are characteristically short-lived or long-lived.¹⁰ If the assertion were based upon observation and the inferences were drawn correctly, there could be no grounds for disputing it. But some economists have sought to prove it by logical argument.

The argument takes a number of forms: (a) When projects are short-lived, interest charges are relatively low and a change in the interest rate will consequently make little difference to costs; and vice versa when projects are long-lived. (b) When projects are short-lived, the ratio of depreciation allowances to interest charges is relatively high and a change in the interest rate will have only a minor effect upon the cost of using capital.¹¹ (c) The discounted value of a short-lived annuity changes much less in response to a change in the interest rate than that of a long-lived annuity.

While these statements may be perfectly correct it is doubtful whether they support the conclusion often drawn from them, or indeed whether they cast any light at all upon the elasticity of the marginal efficiency function.

In considering the relation between the length of life of projects and the elasticity of the function, we must specify carefully a model in which, while the length of life of the assets is made to vary, all other aspects of the projects are held constant. Actually this *ceteris paribus* assumption lies at the source of any confusion there may be. For the "other aspects" to be held constant can be defined in any one of at least four different ways: they can refer to a fixed pattern of expected yields; to a fixed pattern of expected "increments" or *Q*'s; to a fixed pattern of *Q*'s adjusted for differences in depreciation allowances; and finally to a modification of the first meaning to permit changes in the supply prices of the assets.

1. First, assume that the pattern of specific marginal efficiencies is the same whether we are dealing with short-lived or long-lived projects

¹⁰ "... Insofar as the investment which he has in mind involves highly durable forms of capital (buildings and that sort of thing) then there's an important effect of the long term rate of interest itself. Insofar as it involves equipment which wears out fairly rapidly, the rate of interest itself has a quantitatively much less important effect" [3, Question 10968]. Also, "Interest is too weak for it to have much influence on the near future" [11, p. 226].

¹¹ "In general, the sensitivity of demand for real assets to a change in interest rates and credit terms depends on the relative importance of interest charges and amortization payments in the total cost of the project" [20, p. 51].

and that the supply prices of all projects are the same. The short-lived projects A_1 , B_1 , C_1 , and D_1 promise yields of 4, 5, 6, and 7 per cent respectively over a 5-year period. The long-lived projects A_2 , B_2 , C_2 , and D_2 likewise promise yields of 4, 5, 6, and 7 per cent respectively, but their operating lives are assumed to be 10 years.¹² We are to compare the elasticities of the functions for the short-lived and the long-lived projects.

On our assumptions the elasticities of the two functions are exactly the same. If the interest rate were shifted from 5.5 to 4.5 per cent, project B_1 would be added to C_1 and D_1 ; project B_2 would be added to C_2 and D_2 . Once the distribution of expected yields is given, the elasticity of the function is set, and it is unaffected by the length of life of projects.

But this is not the whole story; something will be different in the

TABLE 1—COMPARISON OF SHORT-LIVED AND LONG-LIVED PROJECTS
FIRST ASSUMPTION

Five-Year Projects					Ten-Year Projects				
Project	Annual Increment	Yield	Present Worth of Gains		Project	Annual Increment	Yield	Present Worth of Gains	
			Interest at:					Interest at:	
			5.5%	4.5%				5.5%	4.5%
A ₁	\$224.63	4%	—\$40.77	—\$13.87	A ₂	\$123.29	4%	—\$70.69	—\$22.44
B ₁	\$230.97	5%	—\$13.68	\$13.86	B ₂	\$129.50	5%	—\$23.88	\$24.70
C ₁	\$237.40	6%	\$13.76	\$42.19	C ₂	\$135.87	6%	\$24.13	\$75.10
D ₁	\$243.89	7%	\$41.48	\$70.68	D ₂	\$142.38	7%	\$73.21	\$127.61

two situations and it is important to see precisely what that something is.

Projects A_1 and A_2 promise the same yield, 4 per cent, but over different time periods. The series of increments or Q 's to be derived from A_1 would be \$224.63 a year for 5 years, assuming that the supply price of A_1 is \$1000. The series of increments to be derived from A_2 , assuming it has the same supply price, would be \$123.29 a year for 10 years. The corresponding data for all of the projects, assuming the same supply-price, is given in Table 1.

The measure of the advantage that the firm reaps from undertaking a project which promises to yield *more* than the interest rate equals the discounted value (at that rate) of the annual returns set out above minus the \$1000 required to finance the projects. These measures for an interest rate of 5.5 per cent and 4.5 per cent are also shown in

¹² All expectations are regarded as certain. The effects of risk are to be considered later.

Table 1 for the various projects. With the lower interest rate the gain to be obtained from undertaking any of these projects is increased (or the loss is reduced). More important for our question, the increases in gain brought about by such a reduction in the interest rate are larger for the long-lived projects; project A_2 is worth \$48.25 more when the interest rate falls from 5.5 per cent to 4.5 per cent, while project A_1 is worth only \$26.50 more; and so for B_2 as against B_1 , C_2 and C_1 , and D_2 and D_1 .

But note that it does not follow that a reduction in the interest rate would lead to a greater increase in investment when projects are long-lived than when they are short-lived. In our example the only new project undertaken as a result of the lower interest rate is B_2 where the long-

TABLE 2—EXPECTED YIELDS FROM SHORT-LIVED AND LONG-LIVED PROJECTS
SECOND ASSUMPTION

Annual Increments	Short-lived Projects		Long-lived Projects	
	Project	Yield (per cent)	Project	Yield (per cent)
\$224.63	A_1	4	A_2	4
\$230.97	B_1	5	B_2	4.5*
\$237.40	C_1	6	C_2	5.1*
\$243.89	D_1	7	D_2	5.7*

* Approximate figures

lived projects are in question; and B_1 where the short-lived ones are under examination. The two functions have the same elasticity.

This result will probably not be fully convincing since the critical assumption, that the pattern of yields is the same for the long-lived as for the short-lived sets of projects, may be questioned. Accordingly let us make a different assumption about the returns to the two kinds of project.

2. Assume that there is a given series of increments¹⁸ for each project, and that the series of increments from A_2 is expected to be the same as the series from A_1 , and likewise for B_2 and B_1 , C_2 and C_1 , and D_2 and D_1 .

The expected yields from projects A_1 , B_1 , C_1 and D_1 —4, 5, 6, and 7 per cent respectively—are assumed to be the same as in the first case. We now choose a supply price for each of the longer-lived projects which will set the yield from A_2 equal to that from A_1 and then, with this same supply price, compute yields from B_2 , C_2 , and D_2 . When the supply price for A_2 is \$1821.95 and it returns, according to assump-

¹⁸ For convenience we assume that the annual increments for any project are uniform over its whole life.

tion, \$224.63 a year for 10 years, it yields 4 per cent. With the same supply price, the yields from B_2 , C_2 , and D_2 are also given in Table 2, in comparison with the assumed yields from A_1 , B_1 , C_1 , and D_1 .

On comparing yields from the long-lived projects with those from the short-lived projects we can now find justification for the view that the elasticity of the marginal efficiency function will be higher when projects have a longer life. If the interest rate, in our example, were just below 4 per cent all projects whether short-lived or long-lived would be worth while; if instead it were 5.8 per cent no long-lived projects would be undertaken, but C_1 and D_1 of the short-lived projects would still be approved. Evidently then the conclusion we reach about length of life and elasticity depends upon the interpretation we give to the

TABLE 3—ANNUAL CONTRIBUTION TO NET PROFIT (GROSS OF INTEREST)
SECOND ASSUMPTION

Short-lived Projects			Long-lived Projects		
Project	Annual Net Profit	Index	Project	Annual Net Profit	Index
A_1	\$24.63	100	A_2	\$42.435	100
B_1	\$30.97	125.74	B_2	\$48.775	114.94
C_1	\$37.40	151.85	C_2	\$55.205	130.09
D_1	\$43.89	178.20	D_2	\$61.695	145.39

notion of holding everything else constant when the project's length of life is allowed to vary. We must now look into this second interpretation of the *ceteris paribus* assumption more carefully.

The increments or Q 's, as we have noted earlier, are not taken net of depreciation allowances. The Q 's ($= \$224.63$) of projects A_1 and A_2 represent the annual additions to profit before subtracting depreciation charges. But the amount of depreciation represented in A_1 's Q is $1/5$ of \$1000 or \$200 a year, while it is only $1/10$ of \$1821.95 or \$182.195 a year in A_2 's Q .¹⁴ Hence the projects make quite different contributions to net profit (before subtracting interest charges); A_1 adds \$24.63 a year, while A_2 adds \$42.435 a year. This would provide no ground for criticism were it not for the fact that the *relations* between the contributions to net profit from A_1 , B_1 , C_1 and D_1 and the corresponding contributions from A_2 , B_2 , C_2 and D_2 are quite different. Table 3 makes this clear.

The interpretation of the notion "other things being equal" is of course bound to be arbitrary. But it is doubtful that it is proper to have it apply to a situation in which the patterns of the contributions of the

¹⁴ Assuming straight-line depreciation, which for this purpose is close enough.

various projects to profits differ as between those that have a short life and those that have a longer one. Indeed, as we shall see shortly, it is this difference in the patterns of their contributions to profits (net of depreciation charges) rather than the difference in lengths of life, that lies behind the difference in elasticity noted above.

3. This can be demonstrated by changing the patterns of the annual contributions to net profit so that they are the same whether projects have a short or a long life.¹⁵ The series of increments for A_1 , B_1 , C_1 , and D_1 and also for A_2 are left unchanged. But instead of assuming that B_2 returns \$230.97 a year, inclusive of depreciation charges, we shall suppose that the net return from it is \$53.358 ($= \42.435×125.74)¹⁶ to which the allowance for depreciation amounting to \$182.195 must be added; the series of increments from C_2 would be \$246.632

TABLE 4—COMPARISON OF SHORT-LIVED AND LONG-LIVED PROJECTS
THIRD ASSUMPTION

Five-Year Projects			Ten-Year Projects		
Project	Annual Increments	Yield (per cent)	Project	Annual Increments*	Yield (per cent)
A_1	\$224.63	4	A_2	\$224.63	4
B_1	\$230.97	5	B_2	\$235.55	5 approximately
C_1	\$237.40	6	C_2	\$246.63	6 approximately
D_1	\$243.89	7	D_2	\$257.81	7 approximately

* The supply price of A_2 , B_2 , C_2 , and D_2 is assumed to remain at \$182.195.

($= \$42.435 \times 151.85$ plus \$182.195) and from D_2 , \$257.814 ($= \42.435×178.20 plus \$182.195). Finally, we must compute on the basis of the modified increments the yields over cost from B_2 , C_2 , and D_2 and compare the patterns of yields from A_1 , B_1 , C_1 , and D_1 and from A_2 , B_2 , C_2 , and D_2 . The results are given in Table 4.

Since the patterns of yields are the same, so are the elasticities of the marginal efficiency functions. Length of life of investment projects appears to have no effect upon the elasticity of the marginal efficiency function so long as we take the patterns of net annual increments (or, in accordance with the first interpretation, the patterns of expected yields) to be independent of the projects' length of life.

4. For the fourth interpretation of the *ceteris paribus* assumption we return to the original notion, but this time allow for the effects of induced changes in the prices of capital goods. We will suppose that we have two populations of projects which in the initial situation provide

¹⁵ This will give us the third interpretation of the *ceteris paribus* assumption.

¹⁶ The ratio of the contribution to net profit from B_2 to that from A_2 then equals the corresponding ratio involving B_1 and A_1 . (See Table 3.)

the same pattern of yields. The short-lived projects have, as before, operating lives of 5 years; the long-lived ones all have an infinite life.¹⁷ As before, in Table 5 we identify the projects, the annual increments expected from them and their anticipated yields.

A reduction in the interest rate from, say, 6.1 per cent to 4.1 per cent would lead, as we have noted earlier, to the inclusion of B_1 and C_1 , if our projects were all short-lived, and B_2 and C_2 if they were long-lived, provided that neither the expected increment nor the supply prices of the investment goods were changed in consequence of this reduction. This provision was, of course, implicit also in the previous three cases. But there is the possibility that, as a consequence of the increased level of investment, there would be a rise in the supply prices of investment goods, and hence, assuming no change in expectations

TABLE 5—COMPARISON OF SHORT-LIVED AND LONG-LIVED PROJECTS
FOURTH ASSUMPTION

Short-lived Projects			Long-lived Projects		
Project	Annual Increments*	Yield (per cent)	Project	Annual Increments*	Yield (per cent)
A_1	\$22.0666	4	A_2	\$4	4
B_1	\$22.603	5	B_2	\$5	5
C_1	\$23.149	6	C_2	\$6	6
D_1	\$23.703	7	D_2	\$7	7

* The supply price of all projects is assumed to be 100 at first. In order to facilitate computations, we have determined the annual increments on the assumption of continuous compounding.

as to increments, some reduction in expected yields. If the price increases were the same for both sets of projects, the reduction in expected yields would be somewhat larger for the short-lived projects than for the others.

For example, if as a result of the increased demand for investment goods, their prices uniformly rose by 1 per cent, it would bring about a reduction in the anticipated yields from A_1 , B_1 , C_1 , and D_1 of about .4 percentage points—from 4 to about 3.6 per cent and so on; the same price increase would lead to a decline in yields anticipated from A_2 , B_2 , C_2 , and D_2 of less than .1 percentage points—from 4 to 3.96 per cent; from 5 to 4.95 per cent; from 6 to 5.94 per cent; and from 7 to 6.93 per cent. Hence, the response of investment to a reduction in the inter-

¹⁷ We use infinity rather than 10 years in this example in order to simplify the arithmetic. The assumption of an infinite life is not as absurd as it may sound; it would, for instance, be appropriate if it were expected that through replacements and repairs the projects would be maintained in peak condition indefinitely, in which case, incidentally, the annual increment would have to be taken net of depreciation and repair charges.

est rate, taking this price effect into account, would be greater the longer are the lives of the projects.

But before this conclusion is accepted unreservedly some qualifications must be borne in mind. First, it is likely to prove significant only when the economy is operating near capacity, for only then are prices likely to change appreciably because of a change in the demand for investment goods. Secondly, if prices are especially sticky downwards, then the conclusion is stronger for reductions in the interest rate than for increases. Finally, in so far as price varies inversely rather than directly with the amount of investment, the conclusion reached above is reversed and a change in the interest rate would have a greater effect upon spending on short-lived projects than on those with longer lives.

Note also that the differential effects would not be at all pronounced unless the price changes were appreciable and the differences in the lives of the projects were pronounced. If, instead of operating lives of 5 years and infinity, we had assumed lives of 5 years for one class and 10 years for the other, the difference in effect of a 1 per cent increase in price on yields for the two classes would have been much less, the 5 per cent yield for the former being reduced, as noted above to about 4.6 per cent, while for the latter it would have fallen to 4.8 per cent. Nevertheless, small though the difference may be, the total response to the change of the interest rate would have been somewhat smaller for the short-lived projects than for the long-lived ones.

This assumption shares with that of the first model the feature that the patterns of expected yields are initially the same for both classes of projects; it differs because it takes account of price reactions, and it assumes that although the supply functions of both classes of investment goods are also the same they are not perfectly elastic. But this implies that after prices have reacted to the changes in demand, the patterns of yields are no longer the same. And more important for our problem, the investment responses to a given change in the interest rate where these responses reflect both the elasticities of, and also the shifts in, the marginal efficiency functions are different. Though one may question the appositeness of the *ceteris paribus* assumption after the effects of the change in the interest rate have fully worked themselves out, the meaning given to it at the initial point is not at all unreasonable. It must be remembered, however, that the interpretations given to this same assumption under headings 1 and 3 were also perfectly reasonable, and they led to the conclusion that the response to a change in the interest rate would not depend upon the length of life of investment projects.

In short, under certain circumstances the elasticity, in the widest sense, of the marginal efficiency function would be greater for long-lived projects than for short-lived ones; but under others it would be

no different, and indeed it could even be smaller. Clearly a categorical statement can find no justification until the attendant circumstances are specified in some detail—and certainly in greater detail than is given by the phrase “all other things being assumed equal.”

II. *Riskiness and Elasticity*

It is often asserted that the elasticity of the marginal efficiency function will be relatively low when investment projects are risky.¹⁸ On its face the argument is convincing. Suppose, it goes, the typical businessman requires a certain premium—say 30 per cent—to compensate him for the risk to which he is exposed before he can be persuaded to undertake a certain investment project. With the interest rate at 5 per cent, he would be willing to embark upon only those projects that promised yields, unadjusted for risk, of at least 35 per cent; with the interest rate at 4 per cent, he would be prepared to sponsor those on which expected yields, likewise unadjusted, were at least 34 per cent; and so on. Thus with a 25 per cent reduction in the interest rate (from 5 to 4 per cent) the stimulus to investment would be no greater than that provided by a mere 3 per cent decline in the rate (from 35 to 34 per cent), were there no uncertainty. This suggests an inelastic investment function.

However, the conclusion to which this argument leads is, in fact, far more restricted than it appears to be. As we shall see, it is likely to be valid when there is no direct relation between the amount to be allowed for risk on, and the yield expected from, each project; or when the supply price of investment goods varies directly, and appreciably, with the level of investment. But these conditions can scarcely be taken for granted, and when they are not realized, it does not hold. In the analysis which follows, we shall consider, first, how the various possible patterns of allowances for risk would influence the elasticity of the function, assuming the supply prices of the various projects to be fixed. Then we shall consider the differential effects upon the function's elasticity brought about by changes in the supply prices of investment goods, when the projects covered by the function are, on the one hand, riskless and, on the other, risky.

A. *Effect of Risk Allowance When Projects' Supply Prices Are Fixed*

Since the future returns to any investment project are bound to be uncertain its sponsor can be thought of as making his decision on the basis of a probability distribution of anticipations as to the incre-

¹⁸ “It is fairly certain that ‘risky’ investment, which is usually written off over a few years even if physically long-lived, is insensitive to small changes in interest rates” [5, p. 95]. “. . . risk is too strong to enable interest to have much influence on the far future” [11, p. 226]. See also [4, p. 715] [17, pp. 133-42].

ments (Q 's) and thus as to the yield; and in the degree that he is uncertain he would require a premium, expressed as a certain number of percentage points, to compensate him for risk. A single project about which there is uncertainty will then be worth undertaking if the difference between the best estimate of yield and the allowance for risk exceeds the interest rate.

Considering now the population of projects, the elasticity of the marginal efficiency function which is derived from them when there is uncertainty depends upon the distribution of yields on the various projects after the appropriate allowances have been made. We shall con-

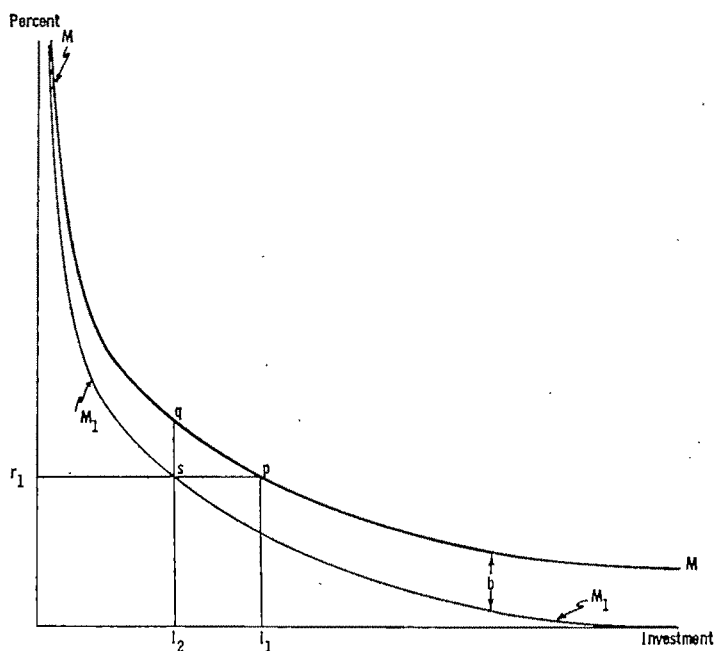


FIGURE 1

sider three possible patterns of allowances: (1) that they are the same on all projects; (2) that although they differ, they are random with respect to expected yields before adjustment for risk; and (3) that they vary directly with expected yields.

1. We consider, first, the simple case in which the same allowance for risk is made on all projects. Let us suppose that the elasticity of the unadjusted marginal efficiency function— MM in Figure 1—is constant over its whole range, and equal to K_1 . Each businessman is assumed to allow for risk by subtracting b percentage points from his best estimate of yield for each project. Then M_1M_1 , which is drawn so that it lies uniformly b points below MM , represents the marginal efficiency

function as adjusted for risk. At a given interest rate, r_1 , I_2 of investment would be programed when there is uncertainty; I_1 would have been undertaken had there been no uncertainty. And the elasticity of the adjusted function M_1M_1 is lower than that of the unadjusted function at the interest rate r_1 for:

$$\text{Elasticity of } M_1M_1 \text{ at rate } r_1 \text{ (at point } s) = \frac{dI_2}{dr_1} \cdot \frac{r_1}{I_2}.$$

Elasticity of MM at rate r_1 (at point p) = elasticity at rate $(r_1 + b)$ or at point q and this equals:

$$\frac{dI_2}{d(r_1 + b)} \cdot \frac{r_1 + b}{I_2} = \frac{dI_2}{dr_1} \cdot \frac{(r_1 + b)}{I_2}.$$

Hence the elasticity of M_1M_1 at r_1 equals: —

$$(\text{elasticity of } MM \text{ at } r_1) \times \left(\frac{r_1}{r_1 + b} \right) = K_1 \cdot \frac{r_1}{r_1 + b}.$$

But to show that the elasticity of the adjusted function is lower than that of the unadjusted function does not show that it is low in an absolute sense. If K_1 is sufficiently high and the allowance for risk is small enough, the elasticity of the adjusted function will still be above unity at any likely interest rate. When K_1 is, say, 5 and the allowance for risk is only 10 percentage points, the adjusted function is only inelastic at interest rates below $2\frac{1}{2}$ per cent. Even with K_1 at 3, and with 15 percentage points uniformly allowed for risk, the adjusted function is only inelastic at interest rates below $7\frac{1}{2}$ per cent.

If the elasticity of the unadjusted function is not uniform over the whole range, the formula still holds, but K_1 must represent the elasticity of the unadjusted function at a point (here q) corresponding to the amount of investment actually taking place. Then, if the elasticity of the unadjusted function should vary inversely with the level of investment, the relative response to a certain change from a designated interest rate may be greater when there is uncertainty than when there is not. It is clear then that even granting the rest of the argument, the introduction of risk does not necessarily lead to a lower elasticity (at a given interest rate) or to a low (less than unity) elasticity:

2. Next we consider the more general case in which, while the allowance for risk may differ from one project to another, it is independent of the gross or unadjusted yields expected on the various projects.¹⁹ Then, provided that the allowance is always positive, and that the unadjusted function is of constant elasticity over its whole range, the elasticity of the adjusted function will be lower than that of

¹⁹ The situation in which these allowances are uniform is a special instance of this condition.

the unadjusted function at each level of investment and at each interest rate.

The proof of the proposition is as follows: MM represents the marginal efficiency function, unadjusted for risk allowances; the elasticity of MM is constant and equal to K_1 over its whole range. We assume that on A per cent of the projects the allowance for risk is equal to b percentage points, and on the remainder it is equal to c percentage points (where both b and $c > 0$). We also assume that the probability of the appearance of a project which is to bear an allowance of b , instead of c , is the same whether the gross yield on the project is high or low.

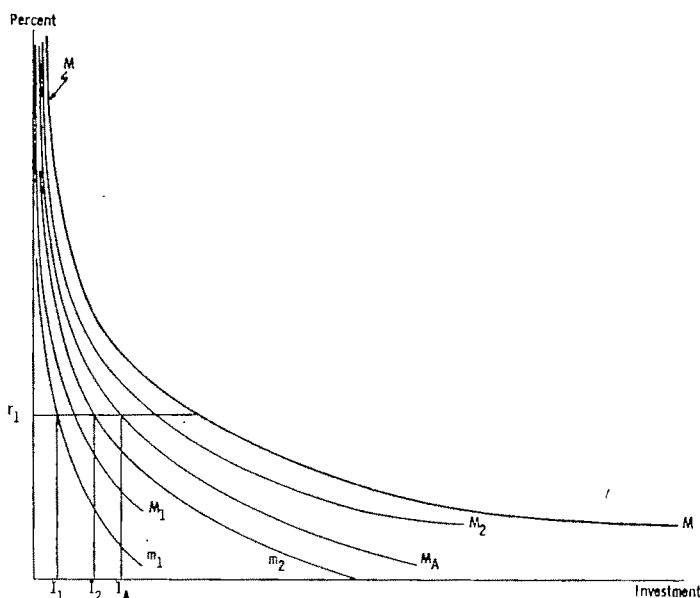


FIGURE 2

The functions M_1 and M_2 are drawn in Figure 2 so that they lie A per cent and $(100 - A)$ per cent respectively of the horizontal distance from the vertical axis and MM . Then M_1 is the marginal efficiency function comprising projects on which a risk allowance of b is to be levied; M_2 is the corresponding function for projects on which the allowance is to be c . And the elasticity of both M_1 and M_2 is equal to K_1 over the whole range of each.

We must now draw m_1 which lies b percentage points below M_1 , and m_2 which lies c percentage points below M_2 for each level of investment. The former curve m_1 represents the adjusted marginal efficiency function for those projects (A per cent in all) which are subject to an allow-

ance for risk of b ; m_2 correspondingly is the adjusted marginal efficiency function for the others. But the elasticity of both m_1 and m_2 is less than K_1 , as we have seen above; in fact the elasticity of m_1 is

$$(K_1) \left(\frac{r}{r+b} \right)$$

and of m_2 ,

$$(K_1) \left(\frac{r}{r+c} \right)$$

—varying, naturally, for different values of r .

We may now combine the two functions m_1 and m_2 by summing horizontally at each percentage rate of yield, in order to derive the adjusted marginal efficiency function (M_A) covering all projects.

The elasticity of M_A at any interest rate r_1 equals

$$\frac{\Delta I_A}{I_A} \div \frac{\Delta r_1}{r_1}.$$

But

$$\frac{\Delta I_A}{I_A} = \frac{\Delta I_1 + \Delta I_2}{I_1 + I_2}.$$

Since

$$\frac{\Delta I_1}{I_1} < K_1 \cdot \frac{\Delta r_1}{r_1} \quad \text{and} \quad \frac{\Delta I_2}{I_2} < K_1 \cdot \frac{\Delta r_1}{r_1},$$

it follows that

$$\frac{\Delta I_1 + \Delta I_2}{I_1 + I_2} < K_1 \cdot \frac{\Delta r_1}{r_1}^{20}$$

and hence

$$\frac{\Delta I_A}{I_A} \div \frac{\Delta r_1}{r_1} < K_1$$

and therefore the elasticity of M_A at r_1 is less than K_1 (= elasticity of MM at r_1). Thus the elasticity of the adjusted marginal efficiency function will be less than that of the unadjusted.

The construction and proof of the corresponding rule, when there are three or more classes of projects, each class being made up of projects on which risk allowances are the same, are identical with those offered above, and no new issue is introduced. Hence the proof can be regarded as perfectly general. But, of course, its validity depends upon there being no relationship between the allowance for risk on any project and its expected gross yield, and in addition upon the elasticity of the unadjusted marginal efficiency function being uniform over its range.

$$^{20} \Delta I < I_1 \cdot K_1 \cdot \frac{\Delta r_1}{r_1} \quad \text{and} \quad \Delta I_2 < I_2 \cdot K_1 \cdot \frac{\Delta r_1}{r_1}.$$

Hence

$$\Delta I_1 + \Delta I_2 < (I_1 + I_2)(K_1) \frac{\Delta r_1}{r_1} \quad \text{and} \quad \frac{\Delta I_1 + \Delta I_2}{I_1 + I_2} < K_1 \cdot \frac{\Delta r_1}{r_1}.$$

3. Now consider the situation in which the allowances for risk vary directly with the yields expected on the various projects. Let us suppose that the yield, adjusted for risk, is derived from the unadjusted yield by multiplying the latter by a certain constant (c), which is less than one. Then, if that constant should be, say, .6, the adjusted yield from a project on which the unadjusted yield was expected to be 50 per cent would come to 30 per cent; and so on. With such a pattern of risk allowances, the elasticity of the adjusted function would be the same as that of the unadjusted function at each level of investment since for any specified, proportionate change in investment, say,

$$\frac{\Delta I_1}{I_1},$$

the corresponding proportionate change in interest rates would be

$$\frac{c \cdot \Delta r}{c \cdot r} = \frac{\Delta r}{r},$$

as before. And if the elasticity of the unadjusted function were uniform over its whole range, the elasticity of the adjusted function would be the same as that of the function before adjustment; the introduction of risk would leave the elasticity unaffected. Moreover, if the elasticity of the unadjusted function varied inversely with the level of investment, then the introduction of risk—assuming it were allowed for in accordance with this rule—would lead to an *increase* in elasticity at each interest rate.

It is apparent that whether the elasticity of the marginal efficiency function comprising risky projects is low or not depends in part upon the way in which allowances for risk are made. Which of the three ways we have considered is the most likely one?

We shall consider, first, the likelihood that these allowances would be uniform. It might be supposed that at least when all projects were "equally risky" allowances would be the same. But quite apart from the ambiguity of the notion—for it could mean that the variances of the expectations of increments for all projects were the same, or that the coefficients of variation of all the expectations of yield were identical, or something still different²¹—this condition would not be sufficient. Before anything can be determined about the sizes of these allowances, information would also have to be forthcoming about the utility functions of the various businessmen: in what degree are they averse to risks?

²¹ To add to the list, it could mean that the variances of expectations of yield were the same; or that the coefficients of variation (or the variances) of the differences between the "worth" of each project and its supply price were identical. In short, the phrase is ambiguous.

Some businessmen are, as a matter of fact, likely to find gratification in being exposed to at least a moderate degree of risk, and they would presumably not require any additional compensation in order to be persuaded to undertake moderately risky projects. Other businessmen may feel a strong aversion to risk and when considering such projects, may insist upon a high premium. Businessmen, then, surely differ amongst themselves in their attitudes toward risk, and even if all projects were thought to be equally risky, they would not make uniform allowances for risk.

The likelihood of uniform allowances becomes even smaller when account is taken of the great differences in the riskiness of the various projects; for just as they differ in respect to expected yield, so too would they be expected to differ in respect to risk.

Of course if all projects were exactly alike in respect to both risk and expected yield and their sponsors were also alike in their attitude towards risk, risk allowances would indeed be uniform.²² This appears to be the assumption that underlies Shackle's demonstration [17, pp. 128-42] but, as we shall see, it clearly calls for the consideration of effects entirely different from those introduced up to this point.

If uniform allowances seem unlikely, what can be said for the view that allowances for risk are likely to be independent of anticipated yield? Not much, as we have already seen, if projects are thought to be equally risky, and if their sponsors share the same attitude toward risk. If sponsors differ in this respect, as surely they do, the problem appears to be insoluble. But what if these differences are unimportant, while the differences to be found as between the various projects are very great. Then, something can perhaps be said: Projects which promise the highest yields are likely to be developed in areas in which change is most marked;²³ but it is in these areas that uncertainties would be most serious. We have already seen that it is a long jump—given the differences among businessmen in their attitudes toward risk

²² If however the various sponsors shared a common attitude toward risk as expressed in a common utility function embodying risk and income, and if all their projects were equally risky, though not expected to provide the same yield, it would not follow that risk allowances would be uniform. Kenneth Arrow and Marc Nerlove have shown in unpublished work that on the assumption of a given utility function, quadratic in form, the allowances sponsors of the various projects would make would vary directly with the expected yields (unadjusted for risk) on these projects. Thus, in that very limited case, something can be said for the view that risk allowances would be proportional to yield; but, as we have seen, if that is so the introduction of risk does not lower the elasticity of the marginal efficiency function.

²³ All investment projects (save for items for replacement) which promise a positive yield reflect the existence of an actual (or at least anticipated) long-run disequilibrium situation of some sort. It seems reasonable to expect that the projects whose yields are expected to be highest are to be found in sectors in which disequilibrium is, or promises to be, most pronounced; and these are likely to be the sectors in which change—in market or technology—is most rapid.

—from the statement that uncertainty is abnormally high somewhere to the conclusion that we should therefore expect to find unusually high allowances for risk in that area. But with that qualification in mind, we might anticipate a direct relationship between the expected yield (unadjusted for risk) on any project, and the allowance for risk to be required by its sponsor. And of course in the degree that this relationship is found, the argument for the conventional view is vitiated.

It is unwise, however, to press an argument too far which requires rationality of decision-makers for its validity. While the common procedures for taking account of the uncertainties that surround an investment project could reflect careful calculations and a keen regard for the desirability of an exposure to risk, they are in fact likely to be too coarse in their application. And accordingly, implicit allowances for risk may turn out to be quite independent of expected yields. Firms frequently allow for risk by setting a period considerably shorter than a project's useful life within which it must return its cost, and in doing so, they are in fact likely to be making allowances for risk which are very substantial, and which depend very sensitively upon the exact pay-off period chosen and the expected useful life.

For instance when a project with a life of 5 years is required to return its cost in, say, 2 years, the implicit allowance for risk is more than 45 per cent.²⁴ If the pay-off period is 1½ years, the allowance for risk on the same project would come to 65 per cent. A 10-year project, required to return its cost in 3 years, would carry an implicit allowance for risk of 32 per cent and the same project with a 2-year pay-off period required would carry an allowance of 50 per cent. These figures are enough to suggest how variable (and appreciable too) are these allowances, and how sensitive they are to the pay-off period taken. The impression that in fact they are chosen rather arbitrarily provides perhaps the strongest argument for the conventional view about the effect of risk upon the elasticity of the marginal efficiency function, for they are unlikely to vary with expected gross yield, and if they are more or less independent of the yield, the adjusted function, as we have seen, may indeed be less elastic than the unadjusted.

How then, considering all these possibilities, should we expect risk to influence the elasticity of the investment function? Clearly, the argu-

²⁴ The calculation is as follows: the annual return inclusive of depreciation allowance and taxes, but exclusive of the interest charge must be 50, assuming the capital outlay to be 100. To this the interest charge of 5 is added, assuming an interest rate of 5 per cent. Then the yield over cost (including allowance for risk) is R where

$$100 = \sum_{t=1}^5 \frac{55}{(1+R)^t}; \text{ solving via } 100 = \frac{55}{R} [1 - e^{-5R}]$$

R comes to 50.6 per cent. The allowance for risk is then 5 per cent less or 45.6 per cent.

ment that it will be reduced since allowances are likely to be uniform has very little to commend it. Very much more can be said in behalf of the view that since risk allowances are likely to be especially high for projects on which the yields are expected to be highest, the elasticity is left unchanged by the introduction of risk. But this conclusion is itself subject to the qualification that, in the real world, allowances are likely to be made in accordance with simple rules which will make them insensitive to expected yield (and also to risk and sponsors' attitudes towards risk); if that view is correct, the elasticity of the investment function would indeed be lowered.

B. Effect of Risk Allowance when Projects' Supply Prices Vary

There remains one more argument for the conventional view to consider;²⁶ as in the case presented at the end of Part I, it relies upon the consequences of an increase (or decrease) in the supply price of investment goods as the demand for them is raised (or lowered).

Suppose we have two groups of projects, all in the first group promising a certain yield ($= p$) with no uncertainty, and all in the second also promising equal yields ($= r$), though with some risk which we shall assume requires a uniform allowance of, say, 20 per cent; moreover, it will be convenient to assume that all the projects in both groups are physically identical or at least that they all represent an equivalent amount of investment in real terms. We also assume that, when the interest rate is 5 per cent the amount of investment, as measured by the number of projects, is the same for each class of projects. If the operating life of all projects is taken as infinity,²⁸ and if each project is expected to provide an annual increment of 5, it follows that the supply price of a riskless project must be 100, while that of a risky project must be 20.²⁷ Now, if the interest rate should be reduced to 4 per cent, the amount of investment in the riskless class would be ex-

²⁶ Cf. Shackle [17, pp. 128-42]. Actually, it is difficult to be sure that his argument should be classified under this heading. Most of it seems to be based upon the assumption that all projects are the same, for risk allowances are assumed uniform, and in considering the elasticity of the function nothing is made of differences in expected yields from the various projects. But his conclusion seems to require such differences for he writes: "Now, there must surely be at any time in the minds of the enterprisers a larger number of contingent investment plans each having a value lying within 18% of its cost than there are of such plans each having a value lying within 6% of its cost" (p. 142). Yet if they exist, surely they would be decisive in establishing the elasticity of the marginal efficiency function.

²⁷ This assumption eases the arithmetic, but though it widens the difference to be noted below, it is not responsible for it.

²⁸ The gross yield of these latter projects must be 25 per cent, and the supply price which will provide such a yield with an annual increment of 5 is $\frac{5}{.25}$ or 20.

panded to a level at which the supply price of one of them comes to 125 or an increase of 25 per cent; the response of investment would depend upon the elasticity of the supply function for such goods. For the risky projects, the same reduction in the interest rate would lead to an increase in investment up to the level at which the supply price was 20.83, or only 4.1 per cent higher than the base level. If the elasticity of supply of these goods is the same, it follows that the response of investment to the reduction in interest rate would be far greater when riskless investment items were in question than for the others.

It must be noted that our conclusion that the elasticity of the marginal efficiency function for risky projects is relatively low is valid only for a special set of conditions. That it requires an elasticity of supply for riskless projects which is not considerably lower than that for risky projects is not objectionable. More serious is the requirement that the level of investment (in real terms), when the process begins, is assumed to be the same whether projects are risky or not. After all, it would be reasonable to expect an economy in which uncertainty prevails to invest at a lower rate, other things being equal, than one in which all expectations were regarded as certain. And then, though the response in absolute terms to a change in the interest rate might well be smaller when risky projects are involved, it would not follow that the elasticity was smaller. Finally, it assumes that the allowance for risk is not reduced (in this case to 18 per cent or lower) when the interest rate is cut.

Considering next the more realistic model in which significant differences exist among the projects of each of the classes, we can see that changes brought about in the supply price of investment goods will influence the total response.²⁸ If the supply price of investment goods varies directly with the level of investment, the consequences of a change in supply price will be greater—though in a direction opposite to that directly caused by the change in interest rate—when risky projects are being considered; and the total response to such a change in the interest rate will therefore be less. If, however, the relationship between investment goods' prices and the amount of investment is inverse, then a change in the interest rate will lead to a greater total change in investment when risky projects are being considered than when riskless ones are—assuming that the patterns of adjusted yields of the two classes of projects are the same to begin with.²⁹

²⁸ As when we were dealing with the relation between the projects' length of life and the elasticity, we should prefer to regard this response as compounded of the elasticity of the marginal efficiency function and shifts in the function itself (brought about, in this case, by changes in the supply price of the investment goods).

²⁹ The consequences of the price change are greater for the risky projects, and this time they operate in the same direction, thus fortifying the total effect. To illustrate: a reduction in the interest rate would lead directly to an increase in investment. Such an increase, according to our assumptions, would lead to a decline in the prices of invest-

It will now be clear that the common view, even when price changes are admitted into the model, can only be accepted with caution. In the first place, the supply price of investment goods must respond directly (and appreciably) to changes in the level of investment—a condition which is likely to hold only when the economy is operating close to its capacity. The supply functions of risky and riskless projects must be the same, or at least the elasticity of that function for risky projects must not be significantly greater than it is for riskless projects. The risk allowances on individual projects must not vary more than proportionally with their expected gross yields, and they must not vary inversely with the interest rate. The elasticity of the adjusted marginal efficiency function for risky projects must not be greater than that of the function embodying riskless projects, at the supply prices ruling before the interest rate is changed. And finally the level of investment when projects are risky must not be significantly below its level when they are riskless. All these conditions might of course be subsumed under a *ceteris paribus* assumption, but it would clearly have a rather complicated content, and with other perfectly reasonable interpretations of the same assumption, the conventional conclusion could find no support.

Thus, in conclusion, while arguments can clearly be found which can validate the view that the elasticity of the marginal efficiency function will be relatively low when uncertainty prevails, it can hardly be claimed that these argument are always (or perhaps even usually?) applicable.

III. *Taxes on Profits and the Elasticity of the Investment Function*

Among the many circumstances that have been adduced to account for the inelasticity of the function of the marginal efficiency of capital,³⁰

ment goods, and such a price reduction would stimulate investment still further, having a more pronounced effect upon risky projects than upon riskless ones.

³⁰ We could add to the list already discussed that the function is likely to be especially inelastic:

(a) *In depression*: "This [the interest-elasticity of the investment function] is likely to change from one phase of the cycle to another. . . . In the depression phase of the cycle, however, the investment function is likely to be interest-inelastic" [10, pp. 76-77].

(b) *In prosperity*: ". . . our second condition provides that a moderate change . . . in the rate of interest will not involve an indefinitely great change in the rate of investment. This is likely to be the case owing to the increasing cost of producing a greatly enlarged output from the existing equipment. If indeed we start from a position where there are very large surplus resources for the production of capital-assets, there may be considerable instability within a certain range"; [for the function would be highly interest-elastic in depression] "but this will cease to hold good as soon as the surplus is being largely utilized" [12, p. 252].

(c) *In the long run*: "The short run elasticity of investment [sic] must, therefore, be very high. The long-run elasticity is, of course, much lower" [9, p. 63].

(d) *In the short run*: "It will be clear that I attribute to monetary forces a substantial influence on investment, though I regard it as slow in coming into effect . . ." [6, p. 139].

the high rates of taxes on corporate profits figure prominently.²¹ We have found no detailed argument supporting this view, though Kaldor presents one in capsule form (in a footnote) to justify what many others evidently regard as obvious. He writes [7, p. 147]:

For what matters from the point of view of the entrepreneur is the excess of the prospective net rate of profit on investment (net after income tax and profits tax) over the net rate of interest on loans (net income tax). With a given gross rate of profit the excess of the net rate of profit [*sic*] over the net rate of interest will of course only be reduced (with a rate of income tax of 50%) by one-half of every percentage point rise in the gross rate of interest.

But unfortunately, while Kaldor's arithmetic is correct for almost every part of the range, it is incorrect in the part that is peculiarly relevant, and his conclusion hence finds no support.

In order to show this, let us once again assume a population of projects which vary among themselves in respect to the yields expected from them. We suppose initially, for simplicity, that all projects have an infinite life so that there is no depreciation; moreover, we assume that all estimates are regarded as certain so that no allowance need be made for risk. Our problem is to see how the elasticity of the marginal efficiency function would be affected by the introduction of a tax on net profits, at a rate of, say, 50 per cent.

The expected yields from the various projects and, assuming that the supply price of each project is 100, the anticipated increments or *Q*'s are shown in Table 6. If taxes were zero, and the interest rate were 9 per cent, it would be profitable to undertake projects A and B. Were the interest rate instead 4.5 per cent, with taxes still zero, projects C, D, E, and F would be added to the list.

Now suppose the 50 per cent tax is imposed. Since it is levied on profit *after interest charges*, we can only determine how high will be the tax on a specific project after we know the interest rate. If the interest rate is again set at 9 per cent, the annual tax on project A would come to 1.5, and the yield, inclusive of interest, which is the measure to be used as the investment criterion, comes to 10.5 per cent. The yields expected on the various other projects are set out in Table 6.

Both projects A and B would once again promise a yield in excess of interest charges, and hence even with the 50 per cent net profits tax, it would be profitable to undertake them; naturally, however, the gain

²¹ "The taxation system also operates so as to reduce the sensitiveness of investment decisions to changes in interest rates" [7, p. 147]. Also: "Moreover . . . and the high level of company taxation both reduce the impact of high interest rates on fixed investment" [8, p. 162]. Also see [1, Question 10410] and [2, Question 10610].

from doing so would be less than it would have been had there been no tax.

With the interest rate at 4.5 per cent, the annual tax on project A would be 3.75 instead of 1.5 and it would have to be recomputed for the others as well; naturally the figures for expected yields would also have to be revised. They are shown in the last column of Table 6. Inspection of these results shows that at the lower interest rate, projects C, D, E, and F would be added to the list of those that are worth while, which is precisely the same result as we obtained when there were no taxes. The response to the reduction in interest rates would be the same whether taxes were levied on net profit or not. In that sense, then, the elasticity of the function is unaffected.

TABLE 6—EXPECTED INCREMENTS AND YIELDS FROM VARIOUS PROJECTS
(With no tax; tax at 50 per cent; with different interest rates)

Project	Expected Q (No tax)	Yield (No tax)	Yield: 50 per cent tax	
			Interest rate 9 per cent	Interest rate 4.5 per cent
A	12	12 per cent	10.5 per cent	8.25 per cent
B	10	10 per cent	9.5 per cent	7.25 per cent
C	8	8 per cent	8 per cent	6.25 per cent
D	7	7 per cent	7 per cent	5.75 per cent
E	6	6 per cent	6 per cent	5.25 per cent
F	5	5 per cent	5 per cent	4.75 per cent
G	4	4 per cent	4 per cent	4. per cent
H	3	3 per cent	3 per cent	3. per cent

Now consider Kaldor's argument. In our example the interest rate was reduced from 9 per cent to $4\frac{1}{2}$ per cent or by 4.5 percentage points. On projects A and B, which would have been undertaken at the higher interest rate, this reduction brings about an increase in the margin between the after-tax yield to be expected and the interest rate which is, as Kaldor says, equal to half the decline in the interest rate, or 2.25 percentage points.³² But for projects C, D, E, and F which are the critical ones since they are the ones that only become worth while at the lower rate, the reduction in the rate brings about an increase in the relevant margin or something more than 2.25 points; for C the increase is 2.75 points; for D, 3.25; for E it is 3.75; and for F, 4.25 points. (And if there had been a project which had promised a yield of 4.5 per cent—before tax—such a decline in the interest rate would have raised the margin by the full amount of the decline.) It is here, with projects which are unprofitable at the higher rate but worth under-

³² For project A, the comparison is $10.5 - 9.0 = 1.5$ points at the higher rate and $8.25 - 4.50 = 3.75$ points at the lower.

taking at the lower, that Kaldor's arithmetic is faulty; and yet it is with respect to these projects and to these only that such arithmetical comparisons matter. The explanation of our result is that on projects that are not profitable at the higher interest rate, no tax would be paid; if the tax is to be paid at both interest rates, which is required if Kaldor's result is to be obtained, the project must have been worth undertaking at both rates.

The question arises whether the results we have reached should be described in terms of the elasticity of the marginal efficiency function. Actually, there is a different function, when taxes are levied on net profit, for each interest rate; note, for example, that the patterns of yields are different when the interest rate is 9 per cent and when it is $4\frac{1}{2}$ per cent. A change in the rate produces two effects—one described by a movement along the function, the response described in terms of the elasticity of the function, and the other described by a shift in the function. In a strict sense, as a comparison of the patterns of yields as set out in Table 6 will show, the function is actually *more* elastic when taxes are levied than when they are zero. But the effect of reducing the rate is partly offset by a shift of the marginal efficiency function in the same direction.

Two objections may perhaps be raised against this demonstration. First, it may be questioned whether our results do not depend upon the assumption that the projects have an infinite life. This objection can be easily answered. The Q 's whose pattern is under examination are to be taken gross of the allowances for depreciation, and if these allowances are computed properly, the answer is the same as that reached on the assumption of infinite lives.³⁸

Secondly, it may be argued that when anticipations are uncertain, the imposition of a tax will compel businessmen to increase risk allowances. Whether this is so will depend, as we have already noted, upon the utility functions of the various project sponsors. But even if it is so, it will not necessarily lead, as we have seen, to a *reduction* in the elasticity of the marginal efficiency function.

The whole analysis of the effect upon the elasticity of profits taxation demonstrates once again that a distinction must be drawn between modifications in the impact of a change in, say, the interest rate upon the worth of a particular project, and changes in the elasticity of the demand for investment goods. The worth of a project whose returns are subject to taxation will be less affected by a shift in the interest rate than the worth of an otherwise identical project with no such tax. But as we have seen before, this does not mean that the demand for

³⁸ Naturally, if the depreciation allowances are inappropriate, the pattern would be affected, though it might just as well show a more elastic function.

projects, when taxes are levied, is less elastic than when there are no taxes.

IV. *The Determinants of Elasticity*

The foregoing analysis should show that we cannot buy knowledge cheap; that if we wish to know whether the marginal efficiency function is elastic or inelastic we shall have to dig out the facts. Our limited objective has been to clear away obstacles that are likely to stand in the way of accurate observation—obstacles which unacceptable theorizing may have erected. Most emphatically it has not been to supply substitutes for such empirical investigation. Whether risk raises or lowers the elasticity of the function; whether the demand for long-lived projects is more or less elastic than that for other projects; whether the elasticity of the function is rendered lower or higher because of taxes on profits are matters which cannot be answered categorically by recourse to "theory." But good theory can of course guide our efforts to determine the answers by pointing out what relations should be investigated, while bad theory will manufacture only false clues.

The thesis of the argument up to this point is that the elasticity of the marginal efficiency function is not necessarily low simply because investment projects are short-lived, or if long-lived simply because their returns are liable to be uncertain, nor is it made low by high taxes on business profit. In short, some at least of the generally accepted rules appear to be misleading. This may suggest that the search for other simple and generally applicable rules will prove to be no more fruitful. In this section instead of embarking upon such a search, we shall set out in general terms a number of factors that appear to play a part in determining the elasticity of the function.

In the final analysis, the elasticity depends upon the pattern of yields expected from the various projects under active consideration. The closer to one another are the expected yields from different projects, the greater is the elasticity, at least around that figure; and the greater the degree of variation in expected yields, the lower is the elasticity. Hence the object of our inquiry is to consider the forces that bring expectations of yield closer together, or farther apart.

Consider first the pattern of expected yields in a static economy in which all units are in long-run equilibrium. With technology, factor prices and markets unchanging, investment projects are required only to provide replacements for capital goods as they wear out. But even in such a situation, the yields anticipated from replacements could be expected to differ among themselves. The yield from any project would depend upon: (a) the rate of increase in costs which accompanies the wearing-out of the assets; (b) the possibilities of modifying this in-

crease by using other equipment more intensively, or substituting other inputs; (c) the elasticity of the cost function; and (d) the elasticity of the demand function. The greater the dispersion of the effects upon cost of wear-and-tear, the greater the dispersion in the capacity to compensate for such cost-increasing developments, and the greater the differences in elasticities, the greater will be the dispersion of expected yields from the various projects, and the lower, then, will be the function's elasticity.³⁴

Next, we may modify our assumption of a static economy so that, though it remains in over-all long-run equilibrium, its sectors need not; this allows us to list additional factors which influence the pattern of expected yields. A shift in demand, for example, from the product of one sector to that of another, will on the average widen the differential between yields expected from projects in these different sectors, provided that the shifts are random with respect to the parameters already noted. Thus, the more pronounced are these shifts, the lower is likely to be the elasticity of the investment function. The same conclusion applies in connection with shifts in cost functions; the more pronounced they are, the lower will be the elasticity, subject to the provision already noted.

Third, when possibilities of growth and technical advance are admitted, the factors making for differences in expected yields obviously multiply. Technical progress and the growth of the economy do not happen evenly, affecting all parts of the economy uniformly. Likewise, changes in factor prices are likely to affect the various projects by different amounts. And the more rapid these changes, the greater are likely to be these differential effects, and hence the lower will be the elasticity of the investment function.

We may then conclude that, considering only the objective circumstances, the elasticity of the investment function will be lowered by pronounced differences, as between sectors, in such developments as: (a) rate at which demand shifts; (b) rate at which costs rise as equipment wears out; and (c) the rate at which technology advances; and finally by the existence of pronounced differences in the elasticities of the cost and demand functions.

Estimates of yield are, however, not simply a matter of objective circumstances. They are made by sponsors who will surely differ amongst themselves. The greater are these differences, the lower, too, will be the elasticity.

Finally, as noted earlier, each sponsor will make an allowance for risk; and the larger are these allowances, subject to a general condition already mentioned, the lower will be the elasticity.

³⁴ Provided that these various parameters are unrelated.

In short, then, low elasticity is a product of differences, and the greater these differences are, the lower will this elasticity be—subject to the important qualification that the patterns of these various differences—in elasticity, cost changes, and so on—are random with respect to one another. But as we have noted in considering the influence of risk upon the elasticity of the investment function, this independence can not be simply taken for granted.

REFERENCES

- 1-4. COMMITTEE ON THE WORKING OF THE MONETARY SYSTEM (RADCLIFFE COMMITTEE), *Minutes of Evidence*. London 1960.
 1. Oliver Franks
 2. Harry Johnson
 3. R. F. Kahn
 4. N. Kaldor
- 5-8. COMMITTEE ON THE WORKING OF THE MONETARY SYSTEM, *Principal Memoranda of Evidence*, Vol. 3. London 1960.
 5. J. C. R. Dow
 6. R. F. Kahn
 7. N. Kaldor
 8. I. M. D. Little, R. R. Neild, and C. R. Ross
9. J. DUESENBERY, *Business Cycles and Economic Growth*. New York 1958.
10. ALVIN HANSEN, *Monetary Theory and Fiscal Policy*. New York 1958.
11. J. R. HICKS, *Value and Capital*, 1st ed. Oxford 1939.
12. J. M. KEYNES, *The General Theory of Employment Interest and Money*. New York 1936.
13. A. KISSELGOFF AND F. MODIGLIANI, "Private Investment in the Electric Power Industry and the Acceleration Principle," *Rev. Econ. Stat.*, Nov. 1957, 39, 363-79.
14. E. LUNDBERG, "The Profitability of Investment," *Econ. Jour.*, Dec. 1959, 69, 653-77.
15. J. R. MEYER AND EDWIN KUH, *The Investment Decision—An Empirical Study*. Cambridge, Mass. 1957.
16. P. A. SAMUELSON, "Reflections on Monetary Policy," *Rev. Econ. Stat.*, Aug. 1960, 42, 263-69.
17. G. L. S. SHACKLE, *Uncertainty in Economics*. Cambridge, Eng. 1955.
18. W. H. WHITE, "Interest Inelasticity of Investment Demand," *Am. Econ. Rev.*, Sept. 1956, 46, 565-87.
19. ———, "The Rate of Interest, the Marginal Efficiency of Capital, and Investment Programming," *Econ. Jour.*, Mar. 1958, 68, 51-59.
20. THE REPORT OF THE COMMISSION ON MONEY AND CREDIT, *Money and Credit: Their Influence on Jobs, Prices, and Growth*. Englewood Cliffs, N.J. 1961.

THE SIZE STRUCTURE OF THE LARGEST INDUSTRIAL FIRMS, 1909-1958

By NORMAN R. COLLINS AND LEE E. PRESTON*

The identity and importance of the largest business units have been subjects of continuing interest in economics. Which are the largest firms? Why are they large? What is their position in the economy? These questions do not involve the examination of competition in particular markets, although the results may be highly significant for market analysis; rather, they involve the identity, structure, and behavior of some groups of firms which are indisputably "large" relative to the other business units in the economy. In this article, we identify the largest industrial firms in the economy over a period of a half century and then develop and apply to these firms a collection of measures which describe changes over time in and *within* their size distributions.

The present investigation is a direct extension of earlier studies—particularly the study of the 100 largest industrials by A. D. H. Kaplan [18]. The thesis examined by Kaplan might be formally stated as follows: Given the continuing importance of giant companies in the economy, does the record of appearance, disappearance, and shift in relative size among the giants suggest the "entrenchment and rigidity of big business leadership" or a "fluid and dynamic situation" in which even the largest firms are subjected to strong competitive pressures? From an examination of lists of the 100 largest industrial firms in five selected years between 1909 and 1948, Kaplan concluded:

Positions of leadership as reflected by a place among the 100 largest industrials appear from the record to have been, on the whole, unsure and maintained with great effort [18, p. 141].

. . . when the total shifting of positions is considered, with 205 firms moving in or out of the class of 100 largest industrials during the forty-year span, . . . the evidence of challenge by competitors both new and old becomes significant [18, p. 142].

. . . There is no reason to believe that those now at the top can remain there any more than did their predecessors, short of alert participation in continuous product and market development.

These evidences of mobility of position among the 100 largest industrials

* Giannini Foundation Paper 211. The authors are, respectively, associate professor of agricultural economics and assistant professor of business administration, University of California, Berkeley. They gratefully acknowledge the assistance of Eleanor M. Birch in the collection and tabulation of data used in this paper.

do not accord with any general assumption that large-scale corporations enjoy secure entrenchment by virtue of their size [18, pp. 142-43].

... The record does ... indicate that we are not justified in identifying increase of financial resources of large-scale enterprise with net decline in the scope and vigor of competition [18, p. 144].

The discussion rising out of Kaplan's work raised questions both as to the facts about the relative stability and turnover among the largest firms in the economy and the interpretation that these facts allow.¹

The present study selects for analysis the 100 largest firms in manufacturing, mining, and distribution in the United States in the years 1909, 1919, 1929, 1935, 1948, and 1958. These firms are identified and ranked in the Appendix (pp. 1004-11). The number of firms is obviously an arbitrary selection, and in this, as in the selection of the years in which observations were to be taken, we have followed Kaplan; the final year was selected in order to bring the work as nearly up to date as reliable data permit. Size of firm is measured by total assets.² The data tabulated in Table 1, line 2, show that the share of the 100 largest firms in the assets of all industrial corporations has increased from something under 25 per cent (perhaps from under 18 per cent) in 1909 to nearly 30 per cent in 1958. Although definitive measurement is not possible, these statements agree with conclusions reached by Kaplan [18, pp. 112-31], Mason [22, pp. 23-32], Bain [6, pp. 187-209], and Adelman [4] that there has been no decline, and possibly a slight increase, in the relative importance of the very largest corporate units in the economy over the first half of the present century.

I. Changes in the Size Structure of the Giant Firms

Changes in the size structure of the 100 largest firms can take any one of the following forms: First, there may be changes in the shape of their size distribution; the largest firms may become more nearly equal or more unequal in relative size. Second, there may be changes in the identity of the giants; new firms may arise to replace others on the list of the largest industrials. Third, there may be internal mixing—change in the size-ordering of firms with respect to each other. In this section, we examine changes of all three types as they have occurred

¹ Kaplan's analysis has been subjected to a number of significant criticisms [5] [11] [19] [21] [31]. Nearly all of the critics pointed out errors or ambiguities in the data used. Further, they questioned whether the data showed evidence of much or little mobility in the size positions of the largest firms and whether the degree of mobility had changed substantially over time.

² The best measure of firm size for a study of this type has been widely debated. Assets have been used here both because of their availability and because of their significance as an index of ability to engage in economic activity. The measurement problem is discussed in virtually all of the references listed at the end of this article.

in the observed years. Further, we utilize the data to project the pattern of change in firm size and group composition taking place over each observed period (for example, 1909-1919, 1919-1929, etc.) to an "equilibrium" size distribution—the distribution that would ultimately result if the process of change revealed in each period were allowed to work itself out over the long run. In order to obtain this result, the observed changes in firm size are placed in a probability framework appropriate for analysis as a Markov process.

A. *Distribution of Assets Among the 100 Largest Firms*

The relative size distribution of the 100 largest industrials has remained remarkably stable over the entire period. In Figure 1, the

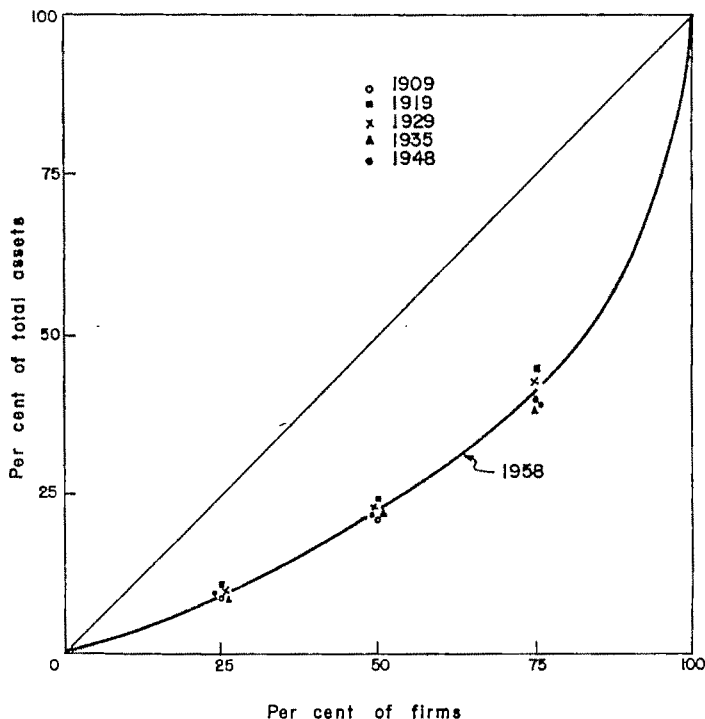


FIGURE 1. CUMULATIVE DISTRIBUTION OF ASSETS OF THE 100 LARGEST INDUSTRIALS, 1958; QUARTILE POINTS FOR SELECTED YEARS, 1909-1948

Lorenz curve for 1958 is shown together with quartile points of the size distributions for 1909, 1919, 1929, 1935, and 1948. The Lorenz curves for all of these years are virtually indistinguishable. The concentration ratios for the 4, 8, and 20 largest firms in each of these years also indicate this stability in the configuration of the size distribution, particularly since 1919 (Table 1, line 3). The decline in the ratios from

1909 to 1919 is due almost entirely to the declining relative size of United States Steel, the assets of which were greatly overvalued in 1909. Since 1919, the share of the 4 largest firms has dropped slightly and those of the 8 and 20 largest corporations have increased.

TABLE 1—CONCENTRATION, ENTRY, AND EXIT DATA ON 100 LARGEST FIRMS IN MANUFACTURING, MINING, AND DISTRIBUTION UNITED STATES, SELECTED YEARS, 1909–1958

	1909	1919	1929	1935	1948	1958
1. Total assets (million dollars)	8,339.6	17,573.8	29,406.4	25,183.9	49,189.3	109,376.2
2. Per cent assets of all industrial corporations ^a	(17.7) ^b	(16.6)	25.5	28.0	26.7	29.8
3. Concentration ratios ^c						
a. 4 largest	32.2	23.9	21.0	23.5	21.4	22.7
b. 8 largest	39.4	32.2	31.0	34.3	31.8	33.9
c. 20 largest	55.2	49.8	51.3	53.7	52.5	54.1
4. Exits ^d						
a. Number	40	31	16	20	16	
b. Per cent all assets	17.8	19.0	7.5	7.8	6.0	
5. Entrants ^d						
a. Number		40	31	16	20	16
b. Per cent all assets		31.3	18.5	5.6	8.9	8.2

* Figures in parentheses are estimated from Internal Revenue Service data on total population of corporations through subtraction of corporations engaged in agriculture, transportation, public utilities, and finance. Data for 1929–1958 are based on corporations submitting balance sheets to the Internal Revenue Service. Because corporations were not permitted to file consolidated returns during 1934–1941 and did not uniformly do so prior to that period, the universe of total assets is overstated, and the share of the largest firms thus understated, to some extent in the earlier years studied here compared with 1948 and 1958.

^b Kaplan's figure was 24.6 [18, p. 126], based upon statistics for "all industrials" in *Report of Commissioner of Internal Revenue, 1910*: "total assets equal capitalization plus bonded indebtedness; the all-industrial category excludes construction."

^c Concentration ratio is the per cent of total assets of 100 largest firms held by the *N* largest firms.

^d Asset shares for the one year in each pair in which the firms in question were among the 100 largest.

B. Changes in the Identity of the 100 Largest Firms

Although the relative size distribution of the 100 largest industrials has not changed significantly since 1909, there has been considerable change in the identity of the firms that comprise this group. Between each pair of years for which observations were made, there were exits from, and a corresponding number of entrants to, the group. In this context, the terms "entry" and "exit" refer to the appearance on, and

departure from, the list of the giants. Rarely is an entering firm new in the economy, nor do exiting firms generally vanish completely except when their assets are merged with those of other enterprises.

The number and relative importance of the firms entering and leaving the list of the 100 largest between each pair of years are given in Table 1, lines 3 and 4. Note that while the 40 firms dropping off the list between 1909 and 1919 had 17.8 per cent of the assets of the giants in the earlier year, the 40 firms appearing first on the 1919 list had 31.3 per cent of the assets of the 100 largest firms in that year. Thus, the new firms appearing on the list tend to be larger relatively, as well as absolutely, than the firms they replace. This relationship holds for every period except 1929-1935. Departures from the list during this last period, as in no other, were due entirely to decreases in dollar asset values. In effect, the bottom of the list dropped down to include some smaller firms. As would be expected, movements on and off the list are much more frequent for the smaller giant firms than for the very largest. Of the 246 instances of exit and entry (out of a possible 1,000 that might have occurred) during the five periods, 109 or 44 per cent were ranked 81 to 100 in their last or first year of appearance among the giants.

The declining importance over time of entry and exit as a source of change in the list of giant firms and in the relative distribution of assets among them is clear from the data. With 123 replacements of firms on the list recorded over a 49-year period, an average of 25.1 changes in the list per decade might be expected. The first two periods clearly exceed this average. The six-year period 1929-1935 is approximately "average" in this sense (16 against an expected 15), and the last two periods are clearly low by this standard.⁸ A significant portion of the high entry-exit rate in the early periods can be traced to amalgamations and court-ordered dismemberments; however, adjustment for these factors does not entirely eliminate the contrast between the early and later periods (See Section II, below).

⁸The declining importance of entry and exit was evident in Kaplan's data, but the sharpness of the decline has been reduced somewhat by our revisions. Even so, it may be that some spurious entry-exit is still recorded. On the basis of material in *Moody's*, American Express Company is retained on the list in 1909 and 1919 but shifted off in 1929 because of its growing operations in finance. Both Greenwater Copper Mines and Development Company of America, cited by Stigler [31] as examples of spurious mobility reflecting the "effrontery of promoters," are retained on the 1909 list. The justification for this retention is that these companies can be adjudged insignificant only with the benefit of hindsight and that their exclusion in 1909 would require the exclusion of, for example, Cuba Cane Sugar in 1919 and 1929 because it went into bankruptcy prior to 1935. However, to the extent that the earlier periods were characterized by greater shifts of firms between industrial and financial activities and by great zeal on the part of promoters, entry-exit in the earlier periods may be somewhat overstated. If so, the noted decline in entry-exit is also overstated.

C. *Movement within the Distribution*

1. *Changes in Rank and Size-Order.* Correlation coefficients have been computed both between the rankings of identified firms from year to year and between the logarithms of the asset sizes. The correlation analysis was confined to those firms that appeared on the list in the first and last years of a single time period, and those surviving firms were reranked as required for each computation. Thus, we correlate rank orderings and sizes of 60 firms for the 1909-1929 period, 69 for the 1919-1929 period, and so on.

Spearman correlation coefficients for the rank orderings and product-moment coefficients for the logarithms of the asset sizes are presented in Table 2, line 1. If we neglect the higher value of the rank correlation coefficient for the shortest of the time periods, 1929-1935, there is a tendency for the rankings to become more stable in the later periods. This same increase in stability in size from year to year may be observed in the product-moment coefficients. Although a single correlation coefficient has little meaning, the computation of the same coefficient for groups of firms selected according to the same criteria over several periods yields a series of comparable statistics which may, at minimum, be interpreted as indicative of a trend. The increases in the coefficients actually observed justify the general observation that the surviving giant firms show a greater stability of size position in the last two periods than in the first two.

2. *Growth Rates of Entering and Surviving Firms.* The increasing stability of relative size position among the giant firms suggested by the correlation measures above is further supported by a comparative analysis of the growth rates of firms on the list in each of a pair of years (the surviving firms for the period) and firms appearing on the list during each period. Between 1909 and 1919, the assets of the 100 largest firms grew at an average annual rate of 7.74 per cent (Table 2, line 2a). The average annual growth rate of assets of the 60 surviving firms, however, was only 5.83 per cent (line 2b). Thus, the 40 firms that came onto the list of the giants between 1909 and 1919 grew at a considerably faster rate than those which remained on the list over the period, and this disparity in the growth rates resulted in significant changes in the relative positions of surviving firms. Thereafter, the survivors grew at approximately the same rate as the aggregate of the 100 largest firms, and the threat to the relative standing of surviving firms lessened.

The mean rate of growth for the individual firms surviving during each period and the standard deviation and coefficient of variation for the distributions of growth rates over each period are presented in lines 2c, d, and e of Table 2. Although the mean rate of growth of assets increased substantially during the last two periods, the striking feature

TABLE 2—CORRELATION COEFFICIENTS AND GROWTH RATES OF 100 LARGEST FIRMS

	1909- 1919	1919- 1929	1929- 1935	1935- 1948	1948- 1958
1. Correlation coefficients, assets of surviving firms					
a. Rank	.65	.70	.89	.83	.79
b. Product moment (logs)	.75	.79	.95	.89	.91
2. Growth rates					
a. Total assets, 100 largest firms (per cent change per year)	7.74	5.28	-2.55	5.28	8.32
b. Total assets, survivors (per cent change per year)	5.83	5.80	-2.22	5.19	8.09
c. Mean per cent rate of growth, survivors	3.92	3.78	-2.04	4.20	6.40
d. Standard deviation of per cent rates of growth, survivors	5.29	4.61	3.59	2.69	3.20
e. Coefficient of variation of per cent rates of growth, survivors	1.35	1.22	1.76	.64	.50

of this tabulation is the decline in the dispersion of growth rates among the surviving giants over the periods under study. The possibility that the variances of the several distributions might be obtained by random sampling from equally dispersed populations may be rejected at a confidence level of less than 1 per cent. The coefficient of variation, which measures the relative dispersion of each distribution about its own mean, clearly indicates the declining variability of growth rates among the surviving giants during the last two periods.

D. *Projection of Equilibrium Size Distribution*

The effect of relative size movements, both entry and exit of firms and internal mobility among a single group of firms, upon the ultimate shape of the size distribution of the industrial giants may be analyzed in terms of a Markov process.⁴ In employing the Markov analysis, we assume that firms in any particular size class remain in that class or move to other classes over time as a result of a stochastic process which may be expressed in terms of a matrix of transition probabilities. For present purposes, the *actual* pattern of size change noted from period to period is used to generate a matrix of transition probabilities for that period. Then the steady state or equilibrium distribution for each transition matrix is projected.

⁴A standard reference on Markov probability analysis is Kemeny, *et al.* [20]. This technique has previously been used in economics for the analysis of income distribution and has been adapted to the study of social mobility by Prais [28] and to the study of changing industry structure by Irma Adelman [1]. Another example of the application of this technique by the present writers may be found in [10]. The most general approach to the application of probability models to industry structure is to be found in the work of Newman and Wolfe [24] [25].

For example, we ask the question: What would be the eventual shape of the size distribution of the giant firms if the process of relative size change that occurred between 1909 and 1919 continued indefinitely? In order to answer this question, we assign all of the firms appearing on the list of the giants in either of the two years to size classes based upon their relative share of the total assets of the 100 largest firms in each of the two years. Arbitrarily, we establish the upper limit of the largest size class as being 100 per cent and determine successive classes such that the lower limit of each class is one-half its upper limit. Hence, the structure of possible size classes is determined as 50-100 per cent, 25-49.9 per cent, 12.5-24.9 per cent, etc. In addition, a "not-on-list" class is created that contains those firms that are not among the giants, including those that are about to enter the group and those that have just dropped below giant size. Using these size classes, we develop a table (Table 3) showing the number of transitional movements of firms from one size class to another over the decade.⁵

TABLE 3—CROSS-CLASSIFICATION OF THE 100 LARGEST INDUSTRIAL FIRMS BY THEIR RELATIVE SIZES IN 1909 AND 1919*

Size of Firm in 1919	Size of Firm in 1909					Total
	Not on List	.195-.389	.39-.779	.78-1.559	1.56 and Larger	
Not on list		14	25	1		40
.195-.389	5		6			11
.39-.779	23	2	13	13		51
.78-1.559	8	1	3	10	5	27
1.56 and larger	4			5	2	11
Total	40	17	47	29	7	140

* A firm's size is here defined as its share of the total assets of the 100 largest firms in the specified year. Thus, the size classes here shown refer to the percentage of total assets. For example, the class .39-.779 includes firms whose share of the total assets of the 100 largest was at least as large as .39 per cent but not as large as .78 per cent.

From the data in Table 3, we determine the relative frequency with which a firm in each size class either remains in that size class over the period or moves to some other. Taking these percentages to represent the probabilities that such shifts will occur in each of an indefinite number of subsequent periods, we compute the equilibrium size distribution. This distribution has the characteristic that, once attained, it

⁵ The data in this and similar tables for each period provide further evidence of the decline in internal mobility among the giant firms from period to period over the half century. The percentages of firms remaining in the same size class from one observed year to the next rose from 25 per cent in 1909-1919 to 58 per cent in 1948-1958. Percentages for other periods are as follows: 1919-1929, 31 per cent; 1929-1935, 59 per cent; 1935-1948, 46 per cent. These results exhibit exactly the same pattern of variation for period to period as the other indicators of internal mobility noted above.

will retain a constant profile in spite of continuous internal movements among the firms.⁶

The equilibrium size distribution may be interpreted as the logical long-term consequence of the forces operative upon the population of giant firms over the particular time period under analysis. Thus, we can analyze these results to determine whether the tendencies observed at work during the period are such as to lead toward a significant change in the size distributions in the long run. Further, we can compare the equilibrium distributions projected from different periods in order to discover differences between the patterns of movement during the periods themselves.

Using this technique, equilibrium distributions have been projected for each of the five time periods for two groups of firms—the 100 largest firms at each date, including the impact of entry and exit upon the distribution, and the surviving firms only over each period.

In Figure 2, the equilibrium distributions projected for the 100 largest firms for each of the periods are presented. For comparative purposes, the actual distribution for 1958 is also plotted. As was shown in Figure 1, the actual distributions for each of the observed years are so

* Three problems in the construction, interpretation, and solution of these matrices should be noted:

(1) Time intervals: The periods of time covered by our data are not all of equal length; hence, the matrices themselves are not directly comparable. No problem arises, however, in the comparison of the equilibrium distributions, all of which are the projected results of the repetition of the stochastic process over an indefinite number of periods.

(2) Size classes: The establishment of size classes is necessarily arbitrary and is significant because the size classes used determine the amount of movement recorded in the matrix and may also determine whether or not the matrix is regular. The procedure adopted here has been to construct size classes in terms of the share of each firm in the assets of the group at each point in time and to determine arbitrarily that a firm must move from one size class to another when its relative share of assets either doubles or falls by one-half.

(3) Regularity: In order that the equilibrium solution exist, be unique, and be independent of the initial configuration, the matrix must allow firms in each size class to move into every other size class in some finite number of periods (thus we are dealing with regular stochastic matrices). Size classes into which there is some positive probability of entering but from which there is no probability of exiting will eventually absorb all of the firms. The ability of a matrix constructed of size classes which make some sort of economic sense to yield a solution is actually a kind of test of the applicability of the Markov model to the data under analysis. Data that do not show a considerable amount of shifting about among size classes may be more appropriately analyzed in terms of some other model. In the data for the 100 largest firms over a half century, the forces of economic change have been sufficient to produce a considerable amount of internal shifting. However, in all of the matrices here analyzed, it has been necessary to collapse the largest size classes. The projections presented below thus fail to specify the distribution of firms and assets among the very largest size classes. The lack of an observed constituency for the "not-on-list-not-on-list" cell of the matrix might appear to raise an additional solvability problem. However, Irma Adelman has shown that the constituency of this cell has no effect upon the normalized values of the equilibrium frequencies in the positive size classes [1, p. 901, n. 16].

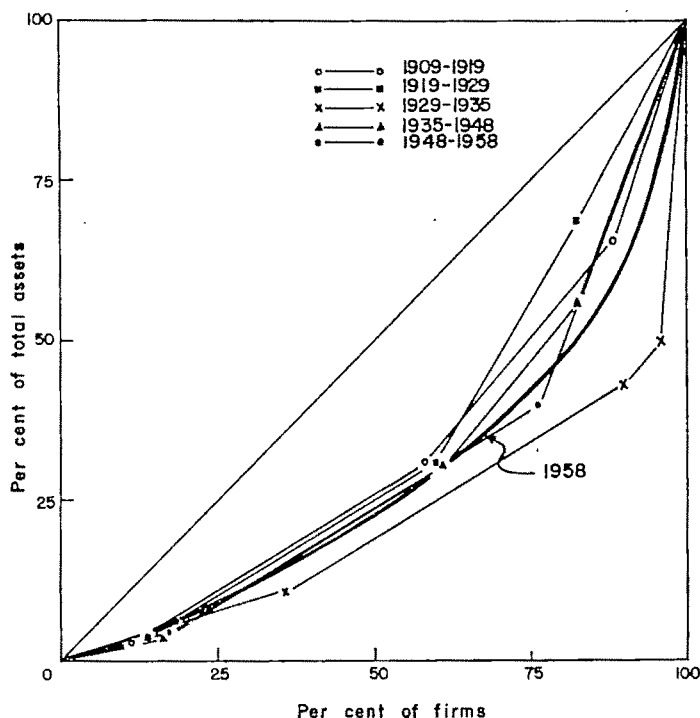


FIGURE 2. PROJECTED EQUILIBRIUM DISTRIBUTIONS, 100 LARGEST INDUSTRIALS, 5 PERIODS; ACTUAL CUMULATIVE SIZE DISTRIBUTION FOR 1958 PLOTTED FOR COMPARISON

similar that one Lorenz curve describes them all with reasonable accuracy. Hence, the 1958 distribution serves as the reference point for all of the projected distributions. A certain amount of disparity between the actual and projected distributions arises because of the greater detail in which the data for the upper tail of the actual distribution are available. Even with this qualification, however, three of the projected distributions—those for 1909-1919, 1919-1929, and 1935-1948—show significantly increased degrees of equality among the firms as compared to the distributions actually observed. The projected distribution from the 1948-1958 data is substantially the same as the actual distribution, and the projection from the 1929-1935 data is clearly in the direction of increased inequality. Hence, with one exception, the patterns of movement into, out of, and within the size distribution of the 100 largest firms over the period have been such as to maintain or slightly decrease the degree of inequality among them. The exception to this finding of a tendency toward stable or decreasing inequality is the short and unusual period 1929-1935.

A similar analysis has also been performed for the surviving firms over each period, and similar results were obtained. In two instances—

1909-1919 and 1948-1958—the projected distributions differ very little from the distributions actually observed. Equilibrium projections for 1919-1929 and 1935-1948 show clear shifts in the direction of decreased inequality as compared to the actual distributions, and the projection from 1929-1935 shows increased inequality.⁷

II. *The Sources of Change in Firm Size*

Changes in relative size may arise both from differential rates in the growth of individual firms and from the effects of amalgamations and dismemberments. Differential rates of growth of individual firms may result from a number of causes, including differences in management skills and goals, different rates of expansion of relevant markets, and technological changes. A detailed examination of the history of individual firms might make it possible to identify firm growth parallel to industry growth, firm growth within its primary industry but greater or less than industry growth, and firm growth through diversification into other industries.⁸

Previous discussions of the growth of the largest firms in the economy have called attention to the role of industry growth in accounting for the relative shifts of importance among the individual firms. From his analysis of the 50 largest industrial firms in the periods 1906-1928 and 1928-1950, Friedland [13] concluded that more than 60 per cent of the growth of giant firms could be attributed to the expansion of the industries in which they were engaged. This conclusion presents difficulties of interpretation for two reasons, as Friedland noted. First, it is impossible to separate cause and effect relationships; that is, the large firms' policies of innovation, aggressive marketing, and rapid expansion may have caused the growth of the industries in which they were engaged. Second, the increasing diversification of operations within the giant firms makes their assignment to industry groups a difficult task. An inspection of the Appendix data suggests an association between growing and declining industries and turnover among the giant firms. However, a definitive quantitative analysis of this association would require a detailed compilation of investment and output data classified according to industry or product for each firm over the entire time period. Census materials may make possible this type of analysis

⁷ Gini coefficients have not been used to compare these distributions because these coefficients are derived from the entire Lorenz curve, and our results involve the estimation of only a few points. Although a smooth curve could be fitted to our data, the presentation of Gini coefficients might convey an impression of accuracy of detail which our data do not in fact support.

⁸ These and other elements in the growth of an enterprise are lucidly analyzed by Edith T. Penrose in qualitative and theoretical terms [26]. The difficulties involved in a reliable quantitative analysis appear almost insuperable.

in the future, but for the past half century it is clearly out of the question.

The impact of amalgamations and dismemberments upon the giants can, however, be partially indicated. It is not possible from available data to identify in detail either all of the instances in which a new firm appeared among the giants as a result of amalgamations among smaller firms or all of the instances in which giant firms grew by amalgamation with small firms.⁹ We can, however, identify those firms that were removed from the list through amalgamation with another listed firm and, also, those firms that appeared on the list as a result of court-ordered dismemberments.

No amalgamations between firms both of which were among the 100 largest have occurred since the period 1929-1935, and only one firm resulting from a dismemberment has appeared among the giants since 1929. The numbers and relative importance of entrants and exits accounted for by amalgamations and dismemberments and the net record of entry-exit data exclusive of their direct and indirect effects are presented in Table 4. The peak period for amalgamations included in the analysis is 1919-1929. For all three periods in which amalgamations occurred, the firms dropping from the list due to lagging rates of internal growth. This is seen from the fact that the share of the firms amalgamated in the assets of all exiting firms exceeds their relative number. The impact of dismemberments on the list is due entirely to the 1911 court decisions in the Standard Oil and American Tobacco cases. The former resulted in 8 and the latter in 3 new appearances among the giants during 1909-1919. Two other oil companies appeared on the list at later dates—Continental Oil during 1919-1929 and Standard Oil (Ohio) during 1935-1948.

The subtraction of entrants and exits due to amalgamations and dismemberments alters the details, but not the general trend, of the entry-exit data. The number of exits during 1919-1929 is reduced to 22, much lower than the 37 during 1909-1919 but not very different from the 20 during 1935-1948. However, the share of total assets accounted for by these exiting firms was 12.2 per cent in 1919, whereas the 20 exiting firms during 1935-1948 accounted for only 7.8 per cent of total assets in 1935. Similarly, the number of entrants during 1909-1919 is reduced to 29, less than the 30 entrants during 1919-1929; but the share of assets accounted for by the 1909-1919 entrants was 23.5 per cent in 1919, compared to 17.8 per cent for the 1919-1929 entrants in 1929.

⁹ Many such instances can be identified by reference to the two detailed analyses of merger activity by Weston [32] and Nelson [231].

TABLE 4—IMPACT OF AMALGAMATIONS AND DISMEMBERMENTS UPON ENTRY AND EXIT DATA, 100 LARGEST FIRMS, FIVE PERIODS*

	1909-1919		1919-1929		1929-1935		1935-1948		1948-1958	
1. Disappearances due to amalgamations										
a. Number	3	9			4		0		0	
b. Total assets (million dollars)	129.2	1,155.3			717.8					
c. Per cent all assets	1.6	6.6			2.4					
d. Per cent all exiting firms	7.5	29.0			25.0					
e. Per cent assets, all exiting firms	8.7	34.6			32.5					
2. Appearances due to dismemberment										
a. Number		11		1		0		1		0
b. Total assets (million dollars)		1,433.0		198.0				237.4		
c. Per cent all assets		8.2		.7				.5		
d. Per cent all entering firms		27.5		3.2				5.0		
e. Per cent assets, all entering firms		25.7		3.6				5.4		
3. Gross entry-exit data, adjusted by lines 1 and 2 above										
a. Exits: Number	37	22			12		20		17	
Per cent all assets	16.2	12.2			5.1		7.8		6.5	
b. Entrants: Number		29		30		16		19		17
Per cent all assets		23.5		17.8		5.6		8.4		8.4
4. Net "natural" entrants and exits ^b										
a. Number	26	21		21		12		19		17
b. Per cent all assets	11.5	11.6		14.4		5.1		7.5		6.5
										8.4

* Data tabulated under the one year in each pair in which the firms in question were among the 100 largest.

^b "Natural" entrants and exits are those which would have taken place without either the direct or indirect impact of amalgamations and dismemberments. For every firm which left the list because of an amalgamation, a new firm was drawn onto the list, and for every firm which appeared due to a dismemberment, an old firm was pushed off. Data in line 4 adjust the original figures for these secondary alterations in the list as well as the primary alterations adjusted for in line 3. The numbers of entrants and exits in each period thus balance and show a hypothetical record of entry and exit in the absence of mergers and dismemberments among the 100 largest firms.

Finally, if we eliminate both the entrants-exits due directly to amalgamations and dismemberments and also the subsidiary changes due to firms being drawn onto the list because of an amalgamation among the larger firms or pushed off the list because of the appearance of a new giant through dismemberment, the number of net entrants and exits shows a decline from 26 in the first period to 17 in the last. The percentages of total assets involved in entries and exits are also revised, but the downward trend remains. The effect of considering these sources of mobility external to the firm is thus to reduce the sharpness of the decline in the incidence and importance of entry and exit revealed in the earlier data but not to eliminate it.

III. *Comparison with British Experience*

It is interesting to compare the results obtained here with those obtained for Great Britain in the several studies of Prais and Hart. Their original investigation [17] was concerned with business units listed on the London Stock Exchange in the categories of "Breweries and Distilleries," "Commercial and Industrial," and "Iron, Coal and Steel." The size measure employed was total stock market valuation; and observations were made for the years 1885, 1896, 1907, 1924, 1939, and 1950. The number of listed companies increased from 60 to 2,103 during this period. The general finding of this study was that inequality of size among the listed companies tended to increase from 1885 to 1939 and to decline slightly from 1939 to 1950. Further, they found that the per cent of companies entering and leaving the listed sector tended, with one exception, to decline consistently from one period to the next. The exception was, not surprisingly, an unusually high rate of disappearances during the period 1924-1939. In response to the criticisms of Florence [12], Hart broadened the inquiry in a subsequent paper [16] to include the unlisted companies in manufacturing with profits used as the size measure. This paper tended to confirm the earlier findings, although it revealed an increase in the share of total profits accruing to the largest companies after 1950. This finding was confirmed by Prais [27, p. 262] in a study of the 100 largest listed companies in manufacturing and distribution, 1948-1953.

In spite of the differences in the periods covered and measures taken, the results of the present study bear some similarity to the results of the investigations by Hart and Prais. The inequality of market valuations for the British companies is only slightly greater in 1950 than in 1907, and the detailed data indicate that the inequality in 1950 would be reduced if only the largest listed firms were analyzed. Hence, over a roughly comparable period it may be concluded that the stability of the size distribution of the largest British industrial firms has

roughly paralleled that of the American.¹⁰ However, except for the possibly spurious increase in the share of the 100 largest firms in the assets of all United States industrial corporations between 1948 and 1958, our data do not reveal any evidence to parallel the recent increase in concentration among the largest firms in Great Britain suggested in the two later papers of Hart and Prais.¹¹

IV. *Conclusions*

The findings on internal size mobility, entry-exit among the giants, and projected changes in the shape of their size distribution are summarized qualitatively in Table 5. The actual size distributions, both of the 100 largest firms and of the survivors over each of the periods, have exhibited very little change throughout the period under study. In the face of this stability in the over-all configuration of firm sizes, the diversity revealed in the detailed results may be surprising. As compared with the last year of each period, the projected equilibrium distributions showed shifts in the direction of decreasing inequality of size among the giant firms in three of the periods, a clear tendency toward increasing inequality during the 1929-1935 decline from boom to depression, and little change in the most recent decade. The results for both the 100 largest firms and the survivors for each period are similar throughout. The amount of movement within the size distribution, as indicated by several measures, can be described as relatively high in the first three periods and relatively low in the last two. The rate of entry and exit among the giant firms can be described as

¹⁰ There is a further interesting parallel. Hart and Prais conclude that: "The typical experience of British industry in the past half century is that, over a ten-year period, about 21 per cent of firms double their size or do better, about 5 per cent quadruple their size or do better . . ." [17, p. 173]. Analysis of the rates of growth computed for the U.S. firms for each period reveals the following results for decade growth possibilities:

<i>Period</i>	Per cent of Firms with Growth Rates Sufficient, in a Decade, to:	
	<i>Double or More</i>	<i>Quadruple or More</i>
1909-1919	20	3
1919-1929	24	2
1929-1935	0	0
1935-1948	22	0
1948-1958	51	1

The British figures for the depression decade are also low, and their data do not include the inflationary decade of the 1950's. Hence, for the three comparable periods, the percentages of firms growing rapidly enough to double their size are virtually identical. This result may, of course, be due entirely to chance. The relative frequency with which firms quadrupled in size appears to be much greater in the British sample with its much larger number of smaller firms.

¹¹ Scattered data pointing to a recent increase in concentration in the United States are, however, cited in a recent note by Moses Rischin [29].

relatively high in the first two periods and relatively low in the last two.

The clearest long-run trends in the shape and stability of the size structure of the industrial giants during this half century are: (1) a decline in the frequency of change in the identities of the giant firms, (2) a decline in the frequency of change in relative size positions among the giants, and (3) a slight tendency for the giant firms to become more nearly equal in relative size. These findings are broadly consistent with the results obtained by others with respect to general trends of concentration in the economy. These results are, however, at sharp variance with the conclusions drawn by Kaplan and other defenders of the "new" competition.

TABLE 5—QUALITATIVE SUMMARY OF FINDINGS

Period	Projected Change in Degree of Equality (equilibrium distribution compared with actual distribution in last year of each period)		Internal Size Mobility (survivors)	Entry-Exit
	100 Largest Firms	Survivors Only		
1909-1919	increase	slight increase	high	high
1919-1929	increase	increase	high	high ^a
1929-1935	decrease	decrease	high	average
1935-1948	increase	increase	low	low
1948-1958	little change	little change	low	low

^a For "natural" entry-exit only, the figure is high for share of assets involved, approximately average for number of firms.

Returning to the Kaplan statement quoted in the introduction of this paper, there is *considerable* reason to believe that firms now at the top of the industrial pyramid *are* more likely to remain there than were their predecessors. The evidence of mobility *does* accord with a general assumption that large-scale corporations enjoy an increasing amount of entrenchment of position by virtue of their size. Whether the increasing stability of position among the largest firms is due to their dynamic management policies and the institutionalization of innovation remains an open question, and it is certainly not to be concluded from this analysis alone that there has been any net decline in the scope and vigor of competition.

However, from the research methodology and substantive conclusions of this investigation, the comments of Simon and Bonini take on increased significance:

. . . The same equilibrium distribution [of firm sizes] may be produced with various degrees of mixing. . . . Public policy might be concerned with the amount of mobility rather than with the resulting degree of concentration . . . a measure of mobility . . . would appear to provide a better

index of what we mean by "equality of opportunity" than do the usual measures of concentration. [30, p. 616.]

The study of mobility presented here was developed directly in response to this suggestion, and it indicates with considerable clarity that, in spite of the stability of the usual concentration measures, there has been a significant decline in "equality of opportunity" in the upper reaches of the U.S. economy since the turn of the century.

REFERENCES

1. IRMA ADELMAN, "A Stochastic Analysis of the Size Distribution of Firms," *Jour. Am. Stat. Assoc.*, Dec. 1958, 53, 893-904.
2. M. A. ADELMAN, "A Current Appraisal of Concentration Statistics," *Jour. Am. Stat. Assoc.*, June 1958, 53, 568 (Summary of paper.)
3. ———, "FTC Report on Changes in Concentration of Manufacturing," *Jour. Am. Stat. Assoc.*, Sept. 1955, 50, 660-64.
4. ———, "The Measurement of Industrial Concentration," *Rev. Econ. and Stat.*, Nov. 1951, 33, 269-96. Reprinted in Heflebower and Stocking, ed., *A.E.A. Readings in Industrial Organization and Public Policy*, Homewood, Ill., 1958.
5. ———, "Note on Corporate Concentration and Turnover," *Am. Econ. Rev.*, June 1954, 44, 392-96.
6. J. S. BAIN, *Industrial Organization*. New York 1959.
7. A. A. BERLE AND G. C. MEANS, *The Modern Corporation and Private Property*. New York 1933.
8. J. M. BLAIR, "Statistical Measures of Concentration in Business," *Bull. Oxford Univ. Inst. Stat.*, Nov. 1956, 18, 351-72.
9. *Business Concentration and Price Policy*. A Conference of the Universities-National Bureau Committee for Economic Research. Princeton 1955.
10. N. R. COLLINS AND L. E. PRESTON, "The Structure of Food Processing Industries, 1935-1955," *Jour. Indus. Econ.*, July 1961, 9, 265-79.
11. C. D. EDWARDS, Review of *Big Enterprise in a Competitive System*, by A. D. H. Kaplan, *Univ. Pennsylvania Law Rev.*, May 1955, 103, 991-98.
12. P. S. FLORENCE, "New Measures of the Growth of Firms," *Econ. Jour.*, June 1957, 67, 244-48.
13. SEYMOUR FRIEDLAND, "Turnover and Growth of the Largest Industrial Firms, 1906-1950," *Rev. Econ. Stat.*, Feb. 1957, 39, 79-83.
14. R. A. GORDON, *Business Leadership in the Large Corporation*. Washington 1945.
15. P. E. HART, "On Measuring Business Concentration," *Bull. Oxford Univ. Inst. Stat.*, Aug. 1957, 19, 225-48.
16. ———, "Business Concentration in the United Kingdom," *Jour. Royal Stat. Soc.*, 1960, Ser. A, 123 (1), 50-58.
17. ——— AND S. J. PRAIS, "The Analysis of Business Concentration: A Statistical Approach," *Jour. Royal Stat. Soc.*, Oct. 1956, Ser. A, 119, 150-75.

18. A. D. H. KAPLAN, *Big Enterprise in a Competitive System*. Washington 1954.
19. CARL KAYSEN, Review of *Big Enterprise in a Competitive System*, by A. D. H. Kaplan, *Explor. Entr. Hist.*, 1955, 7, 237-41.
20. J. G. KEMENY, *et al. Finite Mathematical Structures*. Englewood Cliffs 1959.
21. J. W. MARKHAM, Review of *Big Enterprise in a Competitive System*, by A. D. H. Kaplan, *Am. Econ. Rev.*, June 1955, 45, 448-51.
22. E. S. MASON, *Economic Concentration and the Monopoly Problem*. Cambridge 1957.
23. R. L. NELSON, *Merger Movements in American Industry, 1895-1956*. Princeton 1959.
24. PETER NEWMAN, "The Erosion of Marshall's Theory of Value," *Quart. Jour. Econ.*, Nov. 1960, 74, 587-600.
25. ——— AND J. N. WOLFE, *An Essay on the Theory of Value* (Inst. Quantitative Research in Econ. and Management Paper VI.) Lafayette, Ind. 1960. (Processed.)
26. E. T. PENROSE, *The Theory of the Growth of the Firm*. Oxford 1959.
27. S. J. PRAIS, "The Financial Experience of Giant Companies," *Econ. Jour.*, June 1957, 67, 249-64.
28. ———, "Measuring Social Mobility," *Jour. Royal Stat. Soc., Ser. A*, July 1955, 118 (1), 56-66.
29. M. A. RISCHIN, "A Note on Trends in Industrial Concentration in the United States, 1948-1956," *Antitrust Bull.* July-Aug. 1959, 4, 513-20.
30. H. A. SIMON AND C. P. BONINI, "The Size Distribution of Business Firms," *Am. Econ. Rev.*, Sept. 1958, 48, 607-17.
31. G. J. STIGLER, "The Statistics of Monopoly and Merger," *Jour. Pol. Econ.*, Feb. 1956, 64, 33-40.
32. J. F. WESTON, *The Role of Mergers in the Growth of Large Firms*. Berkeley 1953.

APPENDIX

ASSET SIZES AND RANKS OF THE 100 LARGEST INDUSTRIAL FIRMS, 1909-1958

This list of the largest industrial firms by asset sizes is a revision and extension of the list presented by A. D. H. Kaplan in *Big Enterprise in a Competitive System* [18]. The specific comments of a number of critics have been taken into account and all of the data checked through *Moody's Industrials*. Where there were unexplained discrepancies in the data, the *Moody's* figure was accepted as the more accurate. Where preliminary figures were initially reported in *Moody's* and subsequently revised, the revised figures have been used. Asset figures were taken for December 31 of the specified year or for the fiscal year-end closest to that date and within the period from June 30 of the specified year through June 29 of the year following. In a few instances, absence of data has dictated the use of a more remote figure or an average of two figures on either side of the desired date. In a few instances in the early years, Kaplan presented data for which no contrary or corroborative evidence could be found. These data were retained in the present list. For the 1958 list, the *Fortune* list of the nation's 500 largest firms was used in the same way, with a cross-check through *Moody's*. It is recognized that the use of *Moody's* figures introduces problems due to variations in accounting practices and the treatment of subsidiaries. Wherever there was a choice, the highest possible degree of consolidation has been used and only operating companies have been included.

THE 100 LARGEST INDUSTRIAL FIRMS, SELECTED YEARS, 1909-1958
(assets in million dollars)

Firm	1909		1919		1929		1935		1948		1958	
	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank
Allied Chemical and Dye	25.0	100			387.6	17	400.1	13	338.6	41	748.3	43
Allied Stores									165.4	97		
Allis-Chalmers	54.4	42	61.0	99			73.2	100	253.9	65	468.6	78
Aluminum Company of America			125.0	49	234.7	38	223.0	28	503.6	28	1,337.3	22
American Agricultural Chemical	55.1	41	110.7	56								
American Can	90.4	21	135.1	41	191.3	49	209.1	30	275.8	57	837.2	31
A.C.F. Industries	100.9	17	139.5	37	119.0	83	94.5	86	189.9	83		
American Cotton Oil	38.0	66	62.9	97								
American Cyanamid									212.0	77	584.3	60
American Express	45.9	53	63.1	96								
American Hide and Leather	37.7	69										
American Ice	30.8	86										
American Linseed	33.9	79										
American Locomotive	68.7	35	93.2	67	106.2	96						
American Mailing	34.1	77										
American Rad. & Stand. Sanit.												
American Smelting and Refining	118.7	12	215.3	20	226.8	39	159.1	53	171.3	92		
American Steel Foundries	25.9	96			241.1	35	173.8	45	290.4	54	427.3	84
American Sugar Refining	124.3	9	147.4	35	157.1	66	117.7	72				
American Tobacco	286.0	3	206.1	22	265.4	28	264.2	24	686.7	18	795.6	37
American Viscose												
American Woolen	86.0	23	133.2	42	114.0	88			226.9	72		
American Writing Paper	42.2	56										
Anaconda	170.2	6	254.2	16	764.2	5	581.5	9	660.3	20	1,056.6	23
Armco Steel					128.8	75	123.0	66	316.2	48	896.9	27

Firm	1909		1919		1929		1935		1948		1958	
	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank
Armour and Company	124.8	8	490.8	3	452.3	15	317.1	20	447.7	30	412.5	88
Associated Oil	59.6	38	88.1	74								
Atlantic Gulf and W. Indies S.S.L.	81.1	26	104.9	59								
Atlantic Refining			95.4	65	167.2	56	163.0	51	382.6	34	770.8	40
Baldwin Locomotive Works	41.9	57	65.0	93								
Bethlehem Steel	68.9	34	357.2	6	801.6	4	673.1	7	1,029.0	12	2,195.1	12
Boeing Airplane											605.3	58
Borden	40.0	63	60.5	100	175.4	54	120.1	67	242.2	67	364.7	96
Borg-Warner							76.4	97			399.3	92
Brown												
Burlington Industries									176.8	88	483.6	74
Calumet and Hecla Cons. Copper	57.8	40	100.0	61								
Cambria Steel	63.9	37										
Caterpillar Tractor									256.7	64	494.2	73
Celanese Corporation of America											352.8	100
Chicago Jct. Rys. & Union Stkyds.	30.9	85										
Chile Copper			153.5	33			193.5	33	541.4	25	1,337.5	20
Chrysler			70.3	89	209.7	46	79.1	94				
Climax Molybdenum									205.0	79		
Coca-Cola												
Colorado Fuel and Iron	100.6	18	82.6	80								
Consolidation Coal (original)	74.5	30	135.1	40								
Consolidation Coal (Pittsburg)	105.6	15	161.0	27	171.6	55	142.2	58	167.7	95	362.1	98
Continental Can							94.6	85	221.7	75	688.2	49
Continental Oil					198.0	48	91.7	88	261.9	61	619.7	57
Copper Range	40.9	58										
Corn Products Refining	97.2	19	138.1	38	126.7	77	118.7	69				
Crane			65.5	92	115.9	86	95.2	84				
Crown-Zellerbach					117.7	84	102.2	79	167.3	96	564.9	63
Crucible Steel Company of America	54.2	43	130.0	45	124.4	78	109.1	75				

COLLINS AND PRESTON: SIZE STRUCTURE OF FIRMS 1007

[illegible]

Firm	1909		1919		1929		1935		1948		1958	
	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank
Hearst Consolidated Publications												
Houston Oil of Texas	36.9	71			103.2	97	128.6	62	161.2	100		
Inland Steel							118.3	71	292.8	53	716.4	47
Intercontinental Rubber	33.8	80							242.1	68	1,340.4	19
International Business Machines											1,025.7	24
International Harvester	172.8	5	266.7	13	384.1	18	365.2	15	671.8	19		
International Match					217.6	43						
International Mercantile Marine	202.5	4	268.6	12								
International Nickel	32.6	82	64.6	94	181.9	52	210.6	29	323.3	43	547.6	66
International Paper	70.8	33	87.8	76	333.3	24	247.6	26	323.2	44	891.5	28
International Salt	26.3	95										
International Shoe					111.4	89	83.2	90				
International Steam Pump	46.8	52			222.0	42	185.0	39	379.1	35	798.9	36
Jones and Laughlin Steel	45.0	54	120.0	52							754.4	41
Kaiser Aluminum and Chemical												
Kaiser Steel												
Kennecott Copper												
Koppers			135.6	39	337.8	23	323.6	18	575.4	24	482.0	75
S. S. Kresge					250.0	32	177.3	43			825.7	32
Lackawanna Steel	88.2	22	95.4	64	109.5	93	118.5	70	189.0	84		
Lake Superior												
Lehigh Coal and Navigation	53.6	44										
Lehigh Valley Coal	46.8	51	85.2	78	110.9	90	97.7	80				
Lehigh and Wilkes-Barre Coal	37.2	70										
Libby, McNeill and Libby	37.9	68	67.8	90								
Liggett and Myers Tobacco			155.1	30	160.1	64	170.5	46	425.0	31	409.1	89
Lockheed Aircraft											508.5	71
Loew's					124.2	80	128.6	61	223.1	73		
Long-Bell Lumber					116.2	85						
P. Lorillard Company			88.3	72	110.0	92						

COLLINS AND PRESTON: SIZE STRUCTURE OF FIRMS 1009

Firm	1909		1919		1929		1935		1948		1958	
	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank
R. H. Macy			182.0	23			90.5	89				
Magnolia Petroleum												
May Department Stores	39.9	64	76.8	86					198.9	81		
Mexican Petroleum			280.2	10								
Midvale Steel and Ordnance												
Midwest Refining			86.0	77								
Minnesota and Ontario Paper							78.2	95				
Monsanto Chemical			70.7	88					177.0	87	664.1	52
Montgomery Ward	47.6	50	114.0	54	187.6	50	168.7	47	578.9	23	738.1	46
Morris												
National Biscuit	65.3	36	77.7	85								
National Dairy Products					133.2	72	124.5	64	161.8	99		
National Distillers and Chemical	59.1	39			224.5	41	192.0	36	317.6	46	573.9	62
National Enameling and Stamping	30.2	89							214.6	76	497.3	72
National Lead	50.0	47	88.1	75	108.5	94	104.0	77	183.5	85	361.2	99
National Steel												
New England Navigation	92.5	20			120.8	81	180.5	42	329.9	42	699.0	48
New River	32.5	83										
New York Dock	30.4	88										
Ohio Oil			81.7	81	110.7	91	139.7	59	203.4	80	400.2	91
Olin Mathieson Chemical												
Owens-Illinois Glass											786.8	38
Packard Motor Car									180.3	86	455.2	79
Paramount Pictures			63.1	95								
Pennsylvania Steel	27.4	93			236.7	36	118.9	68	173.7	90		
J. C. Penny												
Phelps Dodge	49.4	49	247.3	17	242.9	34	74.5	98	264.7	60	415.7	86
Phil. and Reading Coal and Iron					129.0	74	185.1	38	274.4	58	425.7	85
Phillips Petroleum					145.4	68	93.0	87	579.3	22	1,515.5	16
Pittsburgh Plate Glass	28.9	90			101.7	99	174.5	44	227.3	71	561.4	65
							109.7	74				

Firm	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank	Assets	Rank
Studebaker			88.1	73	134.2	70	107.1	76	278.6	56	666.9	51
Sun Oil											540.8	69
Sunray Mid-Continent Oil			489.5	4	351.3	22	321.4	19	522.5	27	584.9	59
Swift	112.9	14	261.3	15	609.9	11	473.8	11	1,277.1	6	3,111.5	6
Texas	28.3	91										
Tidewater Oil	26.4	94			251.4	31	182.8	41	287.7	55	810.7	34
Twentieth Century-Fox Film					124.2	79			168.7	94		
Union Bag and Paper	33.5	81										
Union Carbide			212.0	21	353.6	21	271.1	23	722.7	15	1,530.5	15
Union Oil Company of California	78.3	27	89.7	70	370.4	20	151.7	56	298.4	51	684.6	50
United Aircraft											470.0	77
United Copper	50.0	48			102.0	98						
United Drug	40.8	59	147.7	34	226.0	40	184.9	40	319.7	45	391.1	94
United Fruit	40.1	62	79.3	84			96.4	82				
United Shoe Machinery												
U. S. Cast Iron Pipe and Foundry	31.5	84	146.9	36								
U. S. Leather	138.3	7										
U. S. Realty and Improvement	30.8	87			307.9	27	159.3	52	348.5	37	627.9	56
U. S. Rubber	120.9	11	319.5	8								
U. S. Smelting, Refining & Melting	52.1	46	90.9	69								
U. S. Steel	1,822.0	1	2,365.9	1	2,286.2	1	1,822.4	2	2,535.0	3	4,632.8	3
United Cigar Stores					114.4	87						
Utah Copper			79.3	83								
Vacuum Oil			79.6	82	205.7	47						
Virginia Carolina Chemical	72.1	32	121.2	50								
Warner Brothers Pictures					167.2	57	168.5	48	176.3	89		
Wells Fargo	37.9	67										
Western Electric	43.1	55	128.5	46	373.4	19	273.7	22	786.0	14	1,337.4	21
Westinghouse Electric	83.6	24	159.7	29	253.9	29	194.5	32	693.6	17	1,411.5	18
Weyerhaeuser Timber									231.6	70	577.6	61
Wheeling Steel			112.9	55	128.4	76	113.0	73	172.2	91		
Wilson	28.0	92	127.0	47			79.2	93				
F. W. Woolworth			94.1	66	165.4	59	192.3	34	342.3	39	561.9	64
Youngstown Sheet and Tube			115.0	53	235.7	37	207.5	31	311.7	49	660.2	53

THE SIMULTANEOUS DETERMINATION OF SPOT AND FUTURES PRICES

By JEROME L. STEIN*

This paper develops a simple geometric technique for the simultaneous determination of spot and futures prices in commodity markets; and it explains the allocation between hedged and unhedged holdings of stocks. On the basis of this analysis, it is possible to determine whether changes in spot and futures prices have occurred as a result of (a) changes in the excess supply of current production, or (b) changes in price expectations.

The possessor of stocks has two alternatives. He may contract to sell a given physical entity at a stated price, or he may hold stocks for sale at a later date at an uncertain price. If the first alternative is chosen, he may sell either *spot* or *forward*. A forward sale involves delivery at a later date; any storage that the seller is performing is merely a service to his customer.

If the second alternative is chosen, he may hold his stocks either hedged (by selling a *futures* contract) or unhedged; but this form of stockholding involves an uncertain expected return and a probability of a capital loss. Consequently, the owner of stocks will allocate his stocks between hedged and unhedged holdings to maximize his expected utility.

This paper is concerned with both alternatives: the spot sale and the holding of stocks for sale at a later date. Part I develops a theory of holding stocks. It is shown how the possessor of a given quantity of stocks allocates his holdings between hedged and unhedged stocks. Thereby, the supply of hedged and unhedged storage is derived.

Part II discusses the spot and futures markets. Two curves are developed to determine simultaneously the spot and futures prices. One curve gives the pair of spot and futures prices which equilibrate the supply and demand for storage. The other curve gives the pair of spot and futures prices which equilibrate the supply and demand for futures contracts. Equilibrium exists where the two curves intersect.

Part III indicates how these prices are affected by (1) variations in the supply and demand for current production, and (2) changes in the prices expected to prevail at a later date.

Throughout this paper, pure competition is assumed to prevail.

*The author is associate professor of economics at Brown University. He is indebted to M. J. Brennan for stimulating comments on an earlier draft of this paper.

I. *The Decision to Hold Hedged and Unhedged Stocks under Pure Competition*

A. *Unhedged Holding of Stocks*

The expected gain from holding unhedged stocks (u) is equal to the spot price expected to prevail at a later date (p^*) minus the current spot price (p) minus the marginal net carrying costs (m). There are two components of the marginal net carrying costs: the marginal costs of storage and the marginal convenience yield, the latter a negative element in carrying cost. The concept of the marginal convenience yield has been developed by Brennan [1, pp. 53-56] and Telser [4, pp. 235-37]. Since the convenience yield is a measure of the advantage (to the producer, processor, or wholesaler) of having stocks readily available, it depends upon the total quantity of stocks carried—hedged and unhedged. Since the marginal convenience yield is negatively related to the total quantity of stocks carried, the marginal net carrying costs rise with the total quantity of stocks held [1] [4].

The variable p^* is a stochastic variable. There is a probability that a capital loss will be made on the holdings of unhedged stocks: i.e., that $p^* - p - m$ will be negative.

B. *The Holding of Hedged Stocks*

When stocks are hedged, the owner incurs a liability to offset his holding of assets (stocks). His liability is the sale of a futures contract, for the delivery of one of several grades of a commodity sometime within the period of the futures contract. The owner of hedged stocks does not intend to deliver a physical commodity in fulfillment of his futures contract, but intends to repurchase a futures contract at the time that he sells his inventory of stocks [2, Ch. 12-14] [3, p. 153] [6]. The expected gain from holding hedged stocks is equal to the expected gain from holding unhedged stocks minus the expected loss involved in the sale and purchase of a futures contract. At worst, the holder of hedged stocks can deliver one of several grades of a physical commodity in fulfillment of the futures contract, at a premium or a discount to the contract price [2, pp. 33-34].

Let q be the current price of a futures contract and q^* be the price of the futures contract expected at a later date. Then, the expected gain from holding hedged stocks is h ,

$$(1) \quad h = (p^* - p) - (q^* - q) - m.$$

The firm buys stock at p and sells a futures contract for q . The marginal net carrying costs are m . The firm expects to sell the stock at p^* and repurchase its futures contract for q^* . In the event that it costs more to repurchase the futures contract than can be received

from the sale of the unit of stock, it is cheaper to make delivery on the futures contract than to repurchase it, provided that the futures contract permits the delivery of the commodity which is held in storage. In this way, hedging may bound the possible losses that can be suffered in connection with holding stocks. The expected gain from holding *hedged* stock, h , can be written:

$$(2) \quad h = u - (q^* - q) \geq q - p - m.$$

The term $q - p - m$ is the cost of delivering the basic grade on the futures contract.

There are two stochastic variables involved in h : p^* , the expected commodity price, and q^* , the expected price of the futures contract. Inventory losses can be made on hedged inventory, despite the fact that the loss is bounded at $q - p - m$.

C. *The Optimum Combination of Hedged and Unhedged Stocks*

An owner of stocks, for sale at an uncertain price, is assumed to allocate his holdings between hedged and unhedged stocks so as to maximize his expected utility. The method of optimizing developed here is based upon James Tobin's theory of liquidity preference [5, pp. 71-77].

As the proportion of unhedged stock varies between zero and 100 per cent, the expected return per unit of stock varies from h to u . Risk is inherent in each form of stockholding, where risk is defined as the situation whereby the owner may fail to receive his expected return. Many different measures of risk are possible. Tobin [5, p. 72] used the standard deviation of the expected return as his measure of risk. Since he assumed that the probability density functions are symmetrical, a high standard deviation or variance means a high probability of both negative and positive deviations from the mean. Other reasonable measures of risk, which emphasize the disutility aspects of uncertainty, are the probability of loss or the expected value of the loss. These two measures of risk do not presuppose symmetrical density functions. For expositional convenience I shall use the variance of the expected return as a measure of risk, with the assumption that the density functions are symmetrical.

An owner of a unit of unhedged stock has a risk equal to the variance of u . Given p and m , the variance of u is equal to the variance of p^* . The possessor of a unit of hedged stock has a risk equal to the variance of h . Given p , m and q , this is equal to: $\text{var } p^* + \text{var } q^* - 2 \text{ cov } p^*q^*$. As the proportion of unhedged stocks varies from zero to 100 per cent, the risk varies from $\text{var } p^* + \text{var } q^* - 2 \text{ cov } p^*q^*$ to $\text{var } p^*$.

An opportunity locus for expected return and risk, facing the owner

of 100 units of stock, is given by line HU in Figure 1. At point H all of the stocks are hedged, giving an expected return of h and a risk of var h . At point U all of the stocks are unhedged, giving an expected return of u , and a risk of var u . As the ratio of unhedged to total stocks rises (see the scale at the top of Figure 1), the combination of expected return and risk is given by opportunity locus HU . In this diagram it is assumed that unhedged stocks are both riskier and carry a higher expected return than hedged stocks, thereby making line HU positively sloped. There is no reason why line HU could not be nega-

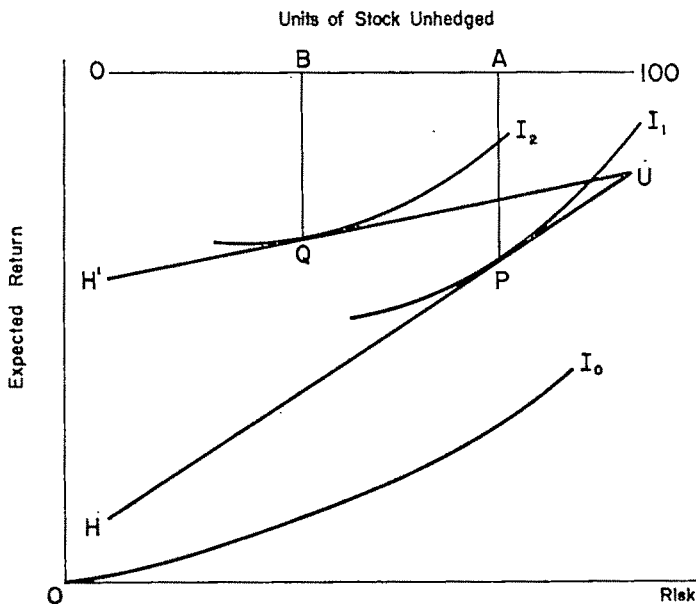


FIGURE 1

tively sloped. In such a case (as will be apparent from the argument below) no unhedged stocks would be carried. Points H and U are based upon given price expectations and risks. As price expectations change, points H and U will move accordingly.

The indifference curve between expected return and risk will be convex—rising at an increasing rate—if the individual has a declining marginal utility of income and a total utility function which can be approximated by a quadratic. The proof of this proposition is given by Tobin [5, pp. 76-77].¹ A family of such indifference curves is given in Figure 1. Given the risk—a point on the abscissa—a higher expected

¹Tobin also considers individuals with constant and rising marginal utility of incomes, i.e., individuals with indifference curves which do not rise at increasing rates. I shall restrict the present analysis to individuals with declining marginal utility schedules.

return implies a higher expected utility of income; the utility expected from the ownership of 100 units of stock rises as we rise vertically in Figure 1. Curve I_2 is preferred to curve I_1 because expected utility is greater along curve I_2 than along curve I_1 .

Point P represents the optimum combination of hedged and unhedged stock, given opportunity locus HU and the indifference map, since expected utility from 100 units of stock is maximized at this point. The individual will hold OA units unhedged and $100 - OA$ units hedged.

Suppose that the price of a futures contract rises, other things remaining unchanged; then the expected return from hedged stock rises to H' ; but the expected return (and risk) on unhedged stock does not change. The new opportunity locus is $H'U$.

The new equilibrium combination of hedged and unhedged stock is given by point Q . As the slope of the transformation line, or opportunity locus, is decreased there is a substitution effect. The ratio of unhedged to total stock will be decreased as the hedging of stock becomes relatively more attractive. Tending to offset this substitution effect is an income effect. The higher expected utility, made possible by the rise in the price of a futures contract, may affect the individual's aversion to risk. In so far as he is more willing to take an additional unit of risk per increment of expected return, when his expected utility is increased, the income effect will induce him to increase the ratio of unhedged to total stock. The crucial question is which effect will dominate? Will the greater attractiveness of holding hedged stock be offset by a greater willingness to assume risk? The substitution effect will be dominant, so that the ratio of unhedged stocks will be decreased as hedging becomes more profitable, given the utility function described above and the occurrence of tangency solutions. *Mutatis mutandis*, the proof of this proposition is found in Tobin [5, p. 79].

D. *The Demand for Stocks or the Supply of Storage*

The total quantity of stocks demanded by owners of stocks (i.e., the supply of storage) is assumed to be an increasing function of the maximum expected utility derived from holding stocks. Initially, the maximum expected utility from holding 100 units of stock was given by I_1 . When the expected return from holding hedged stocks is increased, the maximum expected utility from holding 100 units of stock is given by I_2 , which is preferred to I_1 . As the expected utility from stockholding is increased, the total quantity of stocks demanded (i.e., storage supplied) will also increase.

Storage will only be supplied if the maximum expected utility from storage exceeds the utility derived from a spot sale. Consider an in-

difference curve I_0 (in Figure 1) passing through a point $O (= 0, 0)$ with an expected return of 0 and a risk of zero. This curve will be convex, under the assumptions made above. No stocks will be held for later sale at an uncertain price unless the opportunity locus is tangent to an indifference curve which is preferred to I_0 . In the event of a corner solution, stocks will be held only if the highest attainable indifference curve is preferred to I_0 .

A rise in the maximum expected utility will also occur if the opportunity locus HU , fixed at H , rotates in a counterclockwise direction. For example, suppose that p^* and q^* rose by equal amounts; then, all other things remaining the same, the expected return from unhedged storage rises relative to the expected return from hedged storage—risk remaining constant. The ratio of unhedged to the total stocks will rise; and there will be an increase in the total quantity of stocks demanded. Both income and substitution effects operate in the same direction in this case.

The demand for stocks (i.e., the supply of storage) then depends upon points H and U . Given the risks ($\text{var } h, \text{var } u$), the demand for stocks rises with (1) $p^* - p - m$, and with (2) $(p^* - q^*) + (q - p) - m$. The first term is the expected return derived from holding unhedged stock; the second term is the expected return derived from holding hedged stock. The demand for stocks in the market (S_D) is given by equation (3):²

$$(3) \quad S_D = U(p^* - p - m) + H[(p^* - q^*) + b - m]; \quad U' > 0, H' > 0, \\ \text{where } b = q - p, \text{ the spread.}$$

U is the market demand for unhedged stock and H is the market demand for hedged stock. That is, U is the supply of unhedged storage and H is the supply of hedged storage.

E. *The Duality of Long and Short Hedging*

There are people, such as millers, who have contracted to sell a certain number of units forward at a fixed price. A miller contracts to sell x units of flour for p dollars, to be delivered in (say) 90 days. His stock of flour is $-x$ units, just as the stock of the individual in Figure 1 was $+100$ units. The miller does not know the exact price at which he will be able to purchase his wheat. His gross profit will be $p - p^*$, where p^* is the price at which he expects to purchase the wheat. A miller can hedge by purchasing a wheat future contract at price q , at the time that the flour is sold forward. His expected return

² The process of aggregation is difficult in so far as expectations of individuals differ. Let p^* and q^* refer to the "average" expectations, appropriately weighed, of those who are in the business of supplying storage. See Telser [4, pp. 239-40] on this point.

is $(p - q) + (q^* - p^*)$, where q^* is the price at which he expects to sell the wheat futures contract.

The miller, i.e., the potential long hedger, holds a negative quantity of stock. Moreover, the expected return from his hedged or unhedged position is the negative of the short hedger discussed in the sections above (excluding the marginal net carrying costs).

On the basis of the analysis described in Figure 1, the potential long hedger (e.g., miller) can determine (1) how much of his short position should be covered by the purchase of a wheat futures contract and (2) how many units of flour he should sell short. The first problem is solved by hedging that proportion which will maximize his expected utility—exactly as described above. The second problem is solved by varying his short sales on the basis of the maximum expected utility that he can derive from a short position, where he hedges the proportion called for in the answer to the first problem. The position of the long hedger is the negative of the position of the short hedger, and the same method of analysis is applicable in both cases.

II. *Market Equilibrium*

Market equilibrium prevails when (1) the quantity of stocks demanded (i.e., the supply of storage) is equal to the quantity of stocks in existence (i.e., the demand for storage) and (2) the supply of futures contracts is equal to the demand for futures contracts. An *SS* curve will be derived which equilibrates the market for stocks and an *FF* curve will be derived which equilibrates the market for futures contracts (see Figure 2). Market equilibrium exists when these curves intersect.

A. *The Supply and Demand for Stocks*

The demand for stocks has been given in equation (3). The quantity of stocks in existence is equal to the initial quantity of stocks, S_{-1} , plus the difference between current production and current consumption $X(p, a)$. The quantity $X(p, a)$ is the excess supply of current production, p is the spot price and a is a parameter. An increase in a means a rightward shift of the excess supply curve of current production. This curve is upward-sloping since a rise in the spot price increases the quantity supplied, and decreases the quantity demanded, of current output.

In equilibrium, equation (4) must be satisfied:

$$(4) \quad U(p^* - p - m) + H[(p^* - q^*) + b - m] = S_{-1} + X(p, a).$$

The total quantity of stocks demanded, $U + H$, must equal the total quantity of stocks available, $S_{-1} + X$. The two dependent variables are

p , the spot price and b , the spread between the futures price and the spot price. Once p and b are known, $q \equiv b + p$ is also known. The variable b can be negative; but p must be nonnegative.

Differentiate (4) with respect to p and solve for $\partial b / \partial p$. This is described in equation (5) below.³

$$(5) \quad \begin{aligned} \frac{\partial b}{\partial p} &= \frac{X_p + U'}{H'} > 0; \\ X_p &= \partial X / \partial p > 0, \\ U' &= \partial U / \partial (p^* - p - m) > 0, \\ H' &= \partial H / \partial [(p^* - q^*) + b - m] > 0. \end{aligned}$$

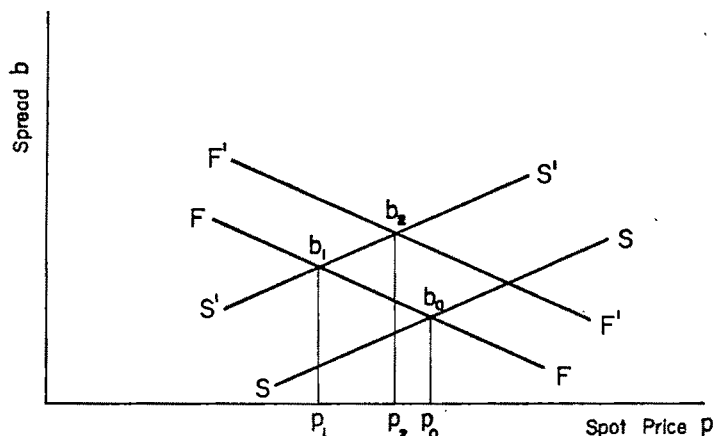


FIGURE 2

For equilibrium to prevail b and p must move in the same direction, and this is described by the SS curve in Figure 2 below. The SS curve is the pair of p and b that must prevail if the supply and demand for stocks (i.e., storage) are to be equal.⁴

The logic of a rising SS curve can be expressed in literary terms, to correspond with equation (5). Given price expectations, a higher spot price will increase the quantity of stocks in existence by increas-

³The marginal net carrying cost has been treated as a constant. This is not necessary. Let (4') $m = m(S)$; $m' > 0$. That is, the marginal net carrying cost rises with the size of the stocks. $S = S_{-1} + X(p, a)$. When we solve for $\partial p / \partial p$, given equations (4) and (4'), we again obtain a rising SS curve. The slope of the SS curve, with a rising m , is steeper than the slope of the curve in Figure 2.

⁴The excess supply of current production could be written as $X(b, a)$, $X_b < 0$ and $X_a > 0$. The rationale for this formulation is that: as the spot price rises relative to the futures price (i.e., b falls) producers speed up production and consumers tend to postpone consumption. The slope of the SS curve obtained thereby is: $\partial b / \partial p = U' / (H' - X_b)$, which is strictly positive. No essential change is introduced into the analysis of the text by altering the excess supply curve of current production in this manner.

ing production and decreasing consumption. What must happen to the spread b to increase the quantity of stocks demanded by those who hold stocks? The spread b must change in such a way as to increase the quantity of stocks that people want to hold. Since a rise in the spread will achieve this end, by increasing the expected utility of holding hedged stocks, b must rise with p to equilibrate the supply and demand for stocks. This establishes the rising SS curve.

B. The Supply and Demand for Futures Contracts

Whenever a unit of stock is hedged, there is a forward contract supplied. The demand for hedged stock (i.e., the supply of hedged storage) is equal to the supply of futures contracts. Hence, the quantity of futures contracts supplied is $H[(p^* - q^*) + b - m]$.

Speculators demand futures contracts and expect to profit from an anticipated rise in the price of futures contracts.⁵ The price q^* expected by hedgers need not be the same as q' , the price of futures contracts that speculators think will prevail in a subsequent period. Speculators expect to make a profit of $(q' - q)$ on each futures contract purchased.⁶

The quantity of futures contracts demanded by speculators is $G(q' - q)$, $G' > 0$. The greater the anticipated profit the greater the quantity of futures contracts demanded. Equilibrium prevails in the market for futures when the supply and demand for futures contracts are equal. This is described by equations (6):

$$(6') \quad H[(p^* - q^*) + b - m] = G(q' - q).$$

Since $q = b + p$

$$(6) \quad H[(p^* - q^*) + b - m] = G(q' - b - p).$$

An FF curve is drawn in Figure 2, based upon equation (6). It describes the relation between b and p that must exist if the supply and demand for futures are to be equal. Differentiate equation (6) with respect, to p , and solve for $\partial b / \partial p$. This yields equation (7), the slope of the FF curve:

$$7) \quad \frac{\partial b}{\partial p} = \frac{-G'}{H' + G'} < 0.$$

⁵For purposes of exposition, the term speculator is reserved for those who are solely in the futures market. I do not refer to an individual who is entirely unhedged in the spot market, on the basis of maximizing expected utility, as a speculator. The only justification for this usage is expositional convenience.

Speculators (as defined above) can be either buyers or sellers of futures contracts depending upon the value of $(q' - q)$. In a market where long hedging dominates short hedging $(q' - q)$ will be negative; and speculators will be short futures.

⁶Individual speculators take q as a datum and adjust their positions on the basis of $(q' - q)$.

It follows that FF is negatively sloped.⁷

A literary explanation of the negatively sloped FF curve can be given. Suppose that the spot price p rises, but the spread b is unchanged (i.e., both p and q rise by the same amount). What will occur? The rise in the price of futures will decrease the quantity of futures contracts demanded by speculators, since $q' - q$ is reduced. On the other hand, the quantity of futures contracts supplied will be unchanged, since the expected profit from holding hedged stocks: $b + (p^* - q^*) - m$, is unchanged. The excess supply of futures contracts lowers the futures price q ; and hence b must decline. When the spot price rises, the supply and demand for futures will be in equilibrium if b is lowered. Hence the negatively sloped FF curve.

Equilibrium exists when (1) the supply and demand for stocks are equal—the economy is on the SS curve—and (2) when the supply and demand for futures contracts are equal—the economy is on the FF curve. This equilibrium exists at (p_0, b_0) in Figure 2. At this point the future price $q_0 = b_0 + p_0$. The simultaneous determination of spot and futures prices has been demonstrated.

III. Comparative Statics

With the aid of the graphic technique developed above,⁸ we show the effects upon the spot price (p) and the spread (b) of (1) a change in the excess supply of current production and (2) changes in price expectations.

A. A Change in the Excess Supply of Current Production

An increase in the excess supply curve of current production shifts the SS curve upward to the left to $S'S'$ and leaves the FF curve unchanged, as shown in Figure 2.⁹ In the new equilibrium, the spot price

⁷ If m is a rising function of the stocks held, then:

$$\begin{aligned} H[b + (p^* - q^*) - m] &= G(q' - b - p); \\ m &= M(S_{-1} + X), \quad M' > 0, \\ \frac{\partial b}{\partial p} &= \frac{-G' + H'M'X_p}{H' + G'}. \end{aligned}$$

The term $H' M' X_p$ is positive. The slope of the FF curve will be negative if $-G' + H' M' X_p$ is negative. Assume that this term is negative.

⁸ For simplicity, m is assumed to be constant. A variable m does not change the results if the assumption of the previous note is made.

⁹ The shift of the SS curve, upward and to the left, as a result of a rise in a is derived. Differentiate (4) with respect to a .

$$H' \frac{\partial b}{\partial a} - (U' + X_p) \frac{\partial p}{\partial a} = X_a.$$

Given p , $\frac{\partial b}{\partial a}$ is positive. Given b , $\frac{\partial p}{\partial a}$ is negative.

is lower ($p_1 < p_0$) and the spread is higher ($b_1 > b_0$).¹⁰

The upward shift in the SS curve to $S'S'$ can be explained in the following way: Given the spot price p and the expected prices p^* , q^* and q' , an excess supply of current production increases the total quantity of stocks available. This increase must all be held hedged, since the unhedged quantity demanded is given as $U(p^* - p - m)$. Hedged stockholding will only increase if b is raised. Hence, the SS curve shifts upward: i.e., given p , b must rise when a is increased.

The equilibrium process shown in Figure 2 can be described as follows: The increase in the available stocks tends to depress the spot price and encourages present consumption. By the same token, storage becomes more profitable. The quantity of unhedged stocks increases since $(p^* - p)$ is increased. Given the price of futures, hedged stock holding also becomes more profitable since $(q - p)$ rises. But the increase in the holdings of hedged stocks produces a greater supply of futures contracts. This tends to reduce the price of futures. In the final equilibrium, q falls by less than p , i.e., the spread b increases. The quantity of unhedged stocks increases because p has fallen relative to p^* ; and the quantity of hedged stocks increases because b rises relative to $(p^* - q^*)$.

This analysis implies that, whenever there is a variation in the excess supply of current production, (1) Δb and Δp will be negatively correlated, and (2) Δp will be negatively correlated with ΔS , the change in the quantity of stocks held in storage.

B. Changes in the Expected Spot Price

When the expected spot price p^* is increased, other things remaining unchanged, the SS curve will shift to the right and the FF curve will shift to the left. If the initial equilibrium was at (p_2, b_2) in Figure 2, the new equilibrium will be at (p_0, b_0) . The spot price will rise from p_2 to p_0 ; the spread will fall from b_2 to b_0 .

The SS curve shifts from $S'S'$ to SS because the rise in expected price makes both hedged and unhedged stockholding more profitable,

¹⁰ The changes in p and b , resulting from a change in a , are seen by differentiating (4) and (6) with respect to a , and solving for

$$\begin{aligned} \frac{\partial b}{\partial a} \quad \text{and} \quad \frac{\partial p}{\partial a} \\ H' \frac{\partial b}{\partial a} - (U' + X_p) \frac{\partial p}{\partial a} &= X_a \\ (G' + H') \frac{\partial b}{\partial a} + G' \frac{\partial p}{\partial a} &= 0. \\ \frac{\partial b}{\partial a} \text{ is positive and } \frac{\partial p}{\partial a} &\text{ is negative.} \end{aligned}$$

given b . The excess demand for stocks cannot be satisfied, at the given b , unless the spot price p rises. Hence, the curve shifts to SS .¹¹

The FF curve will shift from $F'F'$ to FF as a result of the increase in expected price. Given b , a rise in p^* makes hedged stockholding more profitable. This increases the supply of futures contracts. Speculators will only increase their demand for futures contracts if q , the futures price falls. Given $b = q - p$, p must fall. Hence, the FF curve shifts to the left.¹²

In the final equilibrium, b falls from b_2 to b_0 , and p rises from p_2 to p_0 , as shown in Figure 2.¹³ A rise in the spot price is required to satisfy the increased demand for stocks.

When there has been a change in the price p^* expected to prevail in the future, it follows from this analysis that: (1) Δb and Δp will be negatively correlated, (2) Δp and ΔS (the change in the quantity of stocks held in storage) will be positively correlated.

On the basis of observed price and quantity behavior, we can infer whether there has been a change in the excess supply of current production or in expectations concerning the price p^* .

C. An Expectation of Price Rises in Spot and Futures Markets

Suppose that p^* , q^* and q' rise by equal amounts. What will be the effects of this change in expectations upon the current spot price p and the spread b ?

On the basis of equation (4) the demand for unhedged stocks will rise, as $p^* - p - m$ is increased. The demand for hedged stocks will

¹¹ Differentiate equation (4) with respect to p^* , given p . Then,

$$\frac{\partial b}{\partial p^*} = \frac{-(U' + H')}{H'} < 0.$$

This means that the SS curve falls with a given p . Similarly,

$$\frac{\partial p}{\partial p^*}$$

rises for a given b .

¹² Differentiate equation (6) with respect to p^* , holding p constant.

$$\frac{\partial b}{\partial p^*} = \frac{-H'}{H' + G'} < 0.$$

This means that the FF curve shifts down for a given p , or shifts to the left for a given b .

¹³ Differentiate (4) and (6) with respect to p^* .

$$-(X_p + U') \frac{\partial p}{\partial p^*} + H' \frac{\partial b}{\partial p^*} = -(U' + H')$$

$$G' \frac{\partial p}{\partial p^*} + (H' + G') \frac{\partial b}{\partial p^*} = -H'.$$

$$\frac{\partial p}{\partial p^*} > 0 \quad \text{and} \quad \frac{\partial b}{\partial p^*} < 0.$$

be unchanged since $p^* - q^*$ has not increased, and m is assumed to be constant. The excess demand for stocks, given b , can only be satisfied if p rises and induces a greater excess supply of current production. Consequently the SS curve shifts to the right.

On the basis of equation (5) the supply of futures contracts does not increase, because the demand for hedged stocks is unchanged. However, the demand for futures contracts has increased as a result of the rise in q' . This excess demand for futures contracts can be eliminated, given b , by a rise in p . Consequently, the FF curve also shifts to the right.

It is clear that the spot price p must rise. That the spread, $q - p$, must also rise can be explained as follows: The excess demand for futures contracts tends to raise the spread and thereby induces an increase in the quantity of hedged storage.¹⁴

In the case where spot and futures prices are expected to rise: (1) Δp and Δb are positively correlated, (2) Δp and ΔS are positively correlated and (3) Δp and Δq are positively correlated.

D. Conclusions

In so far as the above model (summarized by equations 4 and 6) is a realistic one, it is possible to infer the nature of the forces which produce changes in spot and futures prices.

A positive correlation between Δb and Δp suggests that the market has expected spot and futures prices to move together.

A negative correlation between Δb and Δp , by itself, is not too revealing. If, in addition Δp and ΔS are negatively correlated then there has been a change in the excess supply of current production: for example, an unexpected dumping of Soviet commodities on the world market.

On the other hand if Δp and Δb are negatively correlated, but Δp and ΔS are positively correlated—then there has been a change in the expected spot price but no change in the expected futures price.

REFERENCES

1. M. J. BRENNAN, "The Supply of Storage," *Am. Econ. Rev.*, Mar. 1958, 48, 50-72.

¹⁴ These conclusions are derived as follows:

$$\text{Let } p^* = p_0^* + k, \quad q^* = q_0^* + k \quad \text{and} \quad q' = q_0' + k.$$

Equations (4) and (6) become:

$$\begin{aligned} U(p_0^* + k - p - m) + H[(p_0^* - q_0^*) + b - m] &= S_1 + X(p, a) \\ H(p_0^* - q_0^*) + b - m &= G(q_0' + k - p - b). \end{aligned}$$

Solve for $\frac{\partial p}{\partial k}$ and $\frac{\partial b}{\partial k}$. They are both positive.

2. GERALD GOLD, *Modern Commodity Futures Trading*. New York 1959.
3. H. S. HOUTHAKKER, "The Scope and Limits of Futures Trading," *The Allocation of Economic Resources*, Moses Abramovitz *et al.* Stanford 1959, pp. 134-59.
4. L. G. TELSER, "Futures Trading and the Storage of Cotton and Wheat," *Jour. Pol. Econ.*, June 1958, 66, 233-55.
5. JAMES TOBIN, "Liquidity Preference as Behavior Toward Risk," *Rev. Econ. Stud.*, Feb. 1958, 67, 65-86.
6. HOLBROOK WORKING, "Futures Trading and Hedging," *Am. Econ. Rev.*, June 1953, 43, 314-43.

COMMUNICATIONS

Investment in Human Capital: Comment

The treatment of currently or potentially productive human beings as capital and/or wealth has a long history in economic literature.¹ But during the first half of the twentieth century, certainly, the overwhelming majority of economists, following Alfred Marshall [8, pp. 71-72], have shown a tendency to use the concept of capital as applicable only to that portion of the non-human, material, man-made stock of wealth which is utilized directly in further production.

In spite of "majority opinion" the application of the capital concept to man has not disappeared from economic literature² and the past few years especially have witnessed a revival of the idea in U.S. economic journals. In the forefront of scholarly efforts in this direction stands the work of Theodore W. Schultz [13]-[17].

I shall grant unequivocally that theoretical models, incontestable from an abstract or mathematical point of view, can be built on the basis of the application of the capital concept to man. Yet, I shall contend that it is generally inadvisable to treat man as human capital.

Schultz believes that the main reason for the opposition to the human capital concept is based on a somewhat irrational fear that to accept the concept would be morally wrong and degrading to free man [13, p. 572] [16, p. 2] [17, p. 110]. This, however, is not the reason for my opposition. It is my contention that, mainly for three reasons, economics has little to gain and much to lose by the universal application of the capital concept to man:

First, "investment in man" is essentially different from investment in non-human capital. The difference arises largely from the fact that, as a general rule, at least a part of any one direct expenditure for the improvement of man is not investment as the term is usually used, i.e., it is undertaken for reasons other than the expectation of a monetary return, it has no traceable effects on future output and it satisfies wants directly. To the extent to which any part of such an expenditure is investment in this sense it is rarely if ever "rational" investment based on a careful comparison of alternate investment opportunities, with the anticipated monetary return and the degree of safety as guiding rods. Furthermore, any such part is inseparable from other parts which, not being classified as investment, are then conveniently referred to as consumption expenditure.

Secondly, were it possible to separate consumption expenditure from investment in man it would still remain a virtual impossibility to allocate a *specific* return to a *specific* investment in man (though aggregate expenditures for the improvement of man's skill, abilities, and productive capacities certainly

¹ See for instance [11] [19, pp. 265-66] [5, p. 13] [4, p. 65].

² See [21, n., p. 255] for a short bibliography of articles in British, German, French, and Italian journals during the first three decades of the 20th century.

have a positive influence of indeterminable magnitude on man's efficiency as a productive agent and, hence, on his output).

Finally, if consumption expenditure could be separated from investment in man, and if it were possible to compute the part of man's income that results from a given investment-in-man expenditure, it would in most instances still be ill-advised—from the point of view of social and economic welfare—to utilize the information thus obtained as the exclusive or even the primary basis for policy formation, public or private.⁹

I shall attempt to illustrate how these three arguments are applicable to expenditures on education. I shall then indicate briefly that the same arguments are applicable to direct expenditures on man for purposes other than his education.

I. Education: Consumption Expenditure or Investment?

Few U.S. social scientists today will argue with the basic spirit of Marshall's statement that: "There is no greater extravagance more prejudicial to the growth of national wealth than that wasteful negligence which allows genius that happens to be born of lowly parentage to expend itself in lowly work" [8, p. 212]. But Marshall did not utilize this realization to treat expenditures for education as "investment in man," and neither should we.

Up to a certain age, public school attendance is compulsory and any private expenditures connected therewith (such as expenditures for notebooks, gym clothes, etc.) are taken out of the area of private decision-making (except for whatever influence the parent may have as a voter or vote-getter). Some parents decide to incur additional expenses, beyond those required by law, for their children's education. They may send their children to "better" private schools or to parochial schools, they may provide them with private dancing or piano lessons, they may employ the services of a French governess. But such expenditures, more often than not, are at least in part consumption expenditures as far as both the economic motivation of the investor and the economic effects on the individual and on society are concerned. Due to the inseparability of the consumption and the investment part of such expenditures (and for other reasons discussed below) the return on any incremental expenditure to either the individual or society is not computable.

When we turn from legally required minimum education to voluntary private expenditures for education at the high school and the college level it still seems quite impossible to explain human behavior in terms of capital investment (as we have been using the term). Many a parent who would not think of spending thousands of dollars to establish his son in business or who would at least require a partnership in such a business, does not hesitate to spend

⁹ Joan Robinson sees the main difference between investment in acquiring earning power and investment in income-yielding property in the fact that in a capitalist society the earning power is not a salable commodity in the sense in which the income-yielding property is—a point not stressed in this paper. From this, she reaches the conclusion that "the present capital value of future personal earning has a metaphorical, not an actual financial meaning." While this seems a valid comment, her view that "From the point of view of the economy as a whole, the similarity is more important than the difference," is one contested in this paper [12, pp. 11-12].

an equal amount on his son's education without expecting any monetary return for himself (and with higher anticipated life income for his son often at best one of several motivating factors). The young college student who finances his own education will probably enroll in many courses and read many books that would bear only a remote relation, if any, to future expected or realized income. Although some of these may be required for graduation and therefore may be of indirect economic value, it is in all probability still a fair evaluation of human motivation that "the prospects of achieving more subtle satisfactions from mastering a higher education are more compelling to many people than the prospects of greater financial success." [6, p. 308]. Any attempt to show that rational individuals tend to undertake expenditure on education up to the point where the marginal productivity of the human capital produced by the process of education equals the rate of interest—a point at which the marginal expenditure on education yields a return equal to the return on marginal expenditure for any other factor of production—would be a mockery of economic theory.

At best, we can go along with Schultz's contention that "... *some* individuals and families make decisions to invest in *some* kinds of education, either in themselves or in their children, with an eye to the earnings that they expect to see forthcoming from such expenditures on education."⁴ And Schultz has to admit that in the case of expenditures on human beings, those for consumption and those for the purpose of increasing income are quite interwoven, "which is why the task of identifying each component is so formidable and why the measurement of capital formation by expenditures is less useful for human investment than for investment in physical goods" [16, p. 8]. He therefore proposes yield (measured in increased earnings) as an alternate method for estimating human investment.

II. *Education and Income*

Studies showing a close correlation between schooling (measured in numbers of years of attendance and/or type of school attended) and success (measured in terms of social position and/or annual or life earnings) antedate the turn of the century.⁵ Some recent studies attempt to measure the financial return to "investment" in education. The value of a college education in the late 1950's, for instance, has been estimated anywhere from \$100,000 to almost \$180,000 [2, p. 180] [7, p. 28] [9, p. 981]. However, the present value of a lifetime income differential of nearly \$106,000 between a high school and a college graduate amounts to a mere \$3,305 when figured after taxes and when discounted at 8 per cent [7, p. 28]—not an unreasonable rate of discount if one considers the risk involved in "investing" in a college education.

To obtain valid figures for lifetime incomes (on the basis of present actuarial tables), to correlate such figures with years of schooling, to compute the cost of such schooling in terms of private expenditures, public expenditures, and opportunity costs (*without* any attempt to segregate "consumption" from

⁴ [13, pp. 572-73]. Emphasis mine.

⁵ See [3] for a discussion of many of these early studies and a bibliography of more than 125 books and journal articles on the subject published between 1898 and 1917.

"investment in education" expenditures), to compute the rate of discount which will equate the expenditures with lifetime income differentials, and, finally, to compare this rate with the rate of return on investment in nonhuman capital—all these do not present insurmountable difficulties. But to establish a cause-effect relationship, to prove, in other words, that the income differential is the result of the additional education is quite a different matter. To do so, one would have to assume that the more educated individual does not differ from the less educated in any characteristic (other than education) that could explain part or all of the income differential. Such an assumption would be highly unrealistic as it is evident that there is a close correlation between intelligence and years of schooling (especially at the higher levels). There are also good indications of at least some correlation between the financial standing of parents and the years of schooling of their children. Finally, there is the possibility, if not the strong probability, that other factors such as connections, residence (urban vs. rural, North vs. South, etc.), occupational and cultural level of parents, health, etc. have some influence on years of school attendance. And surely all these factors have a direct bearing on income, independent of years of preparation.

In the early 'forties, Elbridge Sibley studied the case records of 2,158 Pennsylvania students and discovered that, at the below-college level, intelligence had a greater influence on years of education than parental status. However, as to the probability of spending at least one year in an institution of higher learning, "while the most intelligent boys have only a 4 to 1 advantage over the least intelligent, the sons of men in the highest occupational category enjoy an advantage of more than 10 to 1 over those from the lowest occupational level" [18, p. 330].⁶ In his study of the relationship between income (annual and lifetime) and education for the years 1939-1959, Herman P. Miller noted that at least part of the higher income of those with more education could probably be accounted for by differences in intelligence, home environment, family connections, and other factors [9, p. 964] [6, p. 312]. D. S. Bridgman points to evidence that "unearned" (property) income of college graduates is higher than that of noncollege-trained individuals and he expresses the view that factors such as ability and property income have been given insufficient recognition in the past as causal agents of higher income of the more educated [2].

In 1958, Jacob Mincer constructed a model to account for personal income distribution in terms of differential "investment" in education [10]. He started out with many admittedly oversimplified assumptions, one of which was the assumption of identical abilities. But when he relaxed this unrealistic assumption, the plausibility of a positive correlation between ability traits and amount of education (with the obvious effect on income distribution) became apparent [10, p. 286]. To this he added that "when incomes rather than earnings are considered, the positive association of property incomes with occupational level . . . magnifies income differences" (thus accentuating what-

⁶ Sibley's study was published in 1942. Since then (in the United States, at least) increased numbers of scholarships and public subsidization of education have certainly diminished the dependence of schooling upon parental status.

ever effects the training factor per se might have) [10, p. 302]. Therefore, he could not and did not claim that a quantitative estimate of the effect of training on personal income distribution could be derived using his model.

J. R. Walsh, in his early (1935) study of the applicability of the capital concept to man, explained that in order to isolate the effect of education he would have to eliminate all other influences (such as ability, age, occupation, health, etc.) but that he had attempted no such elimination as he considered it impossible [21, p. 272]. Indeed, it is so completely impossible to eliminate all other influences⁷ that one has to agree with Houthakker that "... we cannot even be sure that the apparent effect of education on income is not completely explicable in terms of intelligence and parents' income, so that the *specific* effect of education would be zero or even negative" [7, p. 28].

There is another factor that enhances the difficulty of determining the return on "investment in education." This factor I shall call "maintenance costs."

Certainly, whenever the financial return on any investment in nonhuman capital is computed, maintenance costs of the capital good are considered. But, to the best of my knowledge, such maintenance costs have been utterly neglected in the case of human capital by all economists who have advocated the application of the capital concept to man. These maintenance costs first arise during the investment period. The tuxedo, the evening dress, the more frequent haircuts may not be absolutely necessary for the increase in subsequent earning capacity but they are *de facto* expenses connected with higher education (and they might be indirectly necessary for the intended investment goals lest the anxiety and the loss of tranquility caused by their absence interfere with scholastic accomplishments). But maintenance costs by no means end with the completion of the investment period. A part of these continuous maintenance costs (such as the more expensive car, the more luxuriously dressed wife, and the more lavishly furnished home of the "organization man," or the more frequently washed shirt and the more frequently dry-cleaned suit of the white collar worker) are almost unavoidably connected with the retention of the position which yields the higher income to the more educated.

Another part of these maintenance costs, perhaps less compulsive but still widely prevalent, relates to increased qualitative (and to some extent also quantitative) consumption demands resulting from higher education, higher income, or both.⁸ To the extent to which increased consumption expenditure results from increased income per se (which it will whenever the marginal propensity to consume is more than zero) it is independent of the cause of the increase in income. To the extent, however, to which increased consumption ex-

⁷ Theoretically it would not be necessary to eliminate all other influences, as partial (or multiple) correlation methods could be employed to allow for the effects of some other variables. However, amount of education is at least partly a matter of personal choice. As long as this is true, no matter how many factors have been considered, one can never be certain that there are not some unanalyzed variables influencing this choice which in themselves are responsible for the income differential attributed to education.

⁸ Other causes of increased consumption, if any, are disregarded as irrelevant to the main argument.

penditure results from the educational development of greater cultural, aesthetic and discriminating tastes (which is not a separable part but rather a result of the aggregate education process), it reflects an increased expenditure directly and uniquely attributable to the specific type of investment (in education).⁹ In time, these education-created expenditures will probably tend to become essential for the former student's efficient performance as a producer and, thus, part of the maintenance costs of the education-created human capital.¹⁰

III. *Public Policy in Relation to Expenditure on Education*

At present, the investment-in-human-capital concept appears to be gaining in favor among "liberals" who apparently intend to utilize it as a rationalization of federal aid to education (and, secondarily, other governmental investment-in-man expenditures). Walter Heller, Chairman of the Council of Economic Advisers to the President, for instance, refers to the human mind as America's greatest resource and points to the "vast implications for public policy" embodied in the development of the investment-in-human-capital concept [20]. But nothing is more dangerous to the very position of the liberals, I fear, than to attempt to defend government expenditures for education as a type of collective business investment which will yield economic returns attractive to the investing society in terms of maximum increase in GNP over and above costs. To cite just one example of the untenable position to which such argumentation could lead: Schultz sees a direct correlation between the lower incomes of Negroes in the United States (as compared with whites) and their relatively lower productivity resulting from inadequate educational preparation [16, p. 3-4] [17, p. 109] and he considers an "investment" in their education as financially sound. But more specific studies clearly show that due to greater vocational opportunities, the income differential correlated with additional education is considerably higher for whites than for Negroes.¹¹ Were we to agree that the government should treat expenditures for education as investment, could not a good case be made for the decrease, if not the discontinuation, of governmental subsidization of nonwhite students and a consequently higher subsidization of the financially more remunerative white students?

By the same token, should society discourage advanced studies by women unless they can give some reasonable assurance that their "human capital" will be used even after they are married? Or should we—COULD WE???—compute the indirect, long-range value of such women to society in terms of

⁹ That there is *some* education-created increase in consumption (and not just substitution of one kind of consumption for another) appears evident from observation.

¹⁰ Schultz does not count such education-created consumption expenditures as maintenance costs. On the contrary, while acknowledging their existence, he suggests that the part of the cost of education that induces them be classified as consumption expenditure. By so decreasing the cost base for investment in education Schultz arrives at a higher rate of return on the investment than he would otherwise [16, pp. 12-13].

¹¹ In 1949, for instance, the difference in income between nonwhite college graduates and nonwhite males with one to three years in college (for the 45-54 year age group) was about \$500 for the year while the corresponding differential for white males was about twice as great [6, p. 309].

increased future productivity of their children whom they would perhaps rear more efficiently? The education of many young men and women who choose to prepare themselves for professions which they expect will yield them comparatively low monetary but comparatively high psychic incomes (such as teaching) might be of great value to society. But if we were to take return on investment as the guiding rod, how would we proceed? A teacher's *immediate, direct* contribution to GNP (equal to his gross income) would not be a true reflection of his value to society, and his *indirect, long-run* effect (expressed in terms of his influence on the income of others) is not measurable. Marshall proclaimed that: "All that is spent during many years in opening the means of higher education to the masses would be well paid for if it called out one more Newton or Darwin, Shakespeare or Beethoven" [8, p. 216]. Was Marshall wrong? I do not think he was. Yet, how would one obtain empirical evidence that such investment would be "well paid for"? How would one go about computing a significant rate of return on such an investment?

Indeed the advocate of more governmental aid to education who attempts to defend his proposal exclusively on an "it's sound investment policy" basis stands on shaky ground, for he would logically have to advise expenditures on education up to the point where the marginal productivity of the human capital created equaled the marginal productivity of other nonhuman capital, as well as the rate of interest. And what would this advocate of more government aid to education do if he were confronted with a study such as Becker's which reaches the conclusion that "... it would appear that direct returns alone cannot justify a large increase in expenditures on college education relative to expenditures on business capital" [1, p. 349]? He could find support in arguments such as Schultz's that Becker failed to take into consideration that a part of the expenditure on education is always for education as a pure consumer's good, that Becker therefore underestimated the return on investment in education, and that it is reasonable to assume that there has been underinvestment in education [16, p. 15]. But, on the other hand, our advocate of more government aid to education might also have to cope with the argument that Becker, perhaps, overestimated the return on investment in education, as no allowance was made in Becker's study for such parts of total returns as may have been attributable to factors other than education (as discussed in Part II above) or offset by increased "maintenance costs." And once the advocate of increased government aid to education reaches the conclusion that it is impossible to compute a scientifically unassailable rate of return for such investment, he loses even his theoretical basis for *any* government "investment" in education, forcing him once more to utilize arguments other than "it's sound investment policy" to defend his proposals.

IV. *Expenditures on Human Beings Other Than for Education*

For essentially the same reasons as presented in Parts I and II above, it seems for most purposes impractical, inconvenient, and of relatively little use to attempt the explanation of direct expenditures on man, other than for his education, in terms of the investment in human capital concept. And for es-

sentially the same reasons as those presented in Part III above, it seems ill-advised to base governmental policy on such a concept.

Whether we deal with outlays on food, improved medical care, housing, recreational facilities, or other "investments in man," we once again are faced with the impossibility of separating consumption from investment in any of those areas and with the impossibility of computing scientifically valid marginal returns on any of these expenditures. And once again it might prove detrimental to the best interests of society (measured in terms other than aggregate economic returns on investment) to have governmental policy determined (or even substantially influenced) by an investor's point of view. Governmental programs, for instance, providing for medical care or financial assistance to individuals beyond the retirement age (individuals thus fully depreciated as human capital) would be difficult to defend from the point of view of profitable investment per se (except, perhaps, in terms of the greater tranquility and therefore productivity of those still serviceable as human capital); and slum clearance projects might be considered poor investments as compared with the improvement of golf courses that would aid in steadying the nerves of more productive human capital.

V. *Conclusions*

Whether productive human beings should be treated as capital and whether some direct expenditures intended for or resulting in an increase in their productive capacities should be treated as investment in human capital are not questions of principle. There is no "right" or "wrong" way, because what constitutes *capital* and what constitutes *investment* is a matter of definition. Should one decide to include under "investment in human capital" everything that tends to increase man's productivity, the overwhelming part of all expenditures to which we usually refer as consumption expenditures would have to be considered investments. A substantial part of all expenditures for food, shelter, and clothing, many expenditures for recreation, entertainment, and travel, and even some expenditures for mere conveniences and luxuries would certainly need to be reclassified as investments to the extent to which they contribute, directly or indirectly, to the enhancement of a person's productivity.

While it is undeniable that the sum total of countless sensible expenditures on man (including expenditures for his education, health, proper nourishment, etc.) will tend, on the average, to have a beneficial impact upon his productivity, present and future, each of these expenditures individually and all of them in the aggregate consist of inseparable and indistinguishable parts of consumption and investment expenditures. The spender's motivation is essentially different from that of the investor in nonhuman capital. The return on the investment cannot be computed satisfactorily as both the amount of pure "investment" and the return to be allocated thereto are conjectural. And in society's allocation of productive resources for the advancement of economic and noneconomic welfare, the question of the financial wisdom of any direct expenditure on man must be reduced to one of secondary importance. We have come to accept as axioms that health is preferable to illness, knowledge pref-

erable to ignorance, freedom (whatever the term may mean) preferable to slavery, peace preferable to war, etc. Governmental expenditures directed towards the realization of these preferences bear no necessary relation to their economic profitability as investments.

This paper's opposition to the application of the capital concept to man, then, is not based on any argument that such application is "wrong" but only that, more often than not, it would confuse more than elucidate, it would create more problems than it would solve, and—as a basis for public policy—it would be of questionable value.

HARRY G. SHAFFER*

REFERENCES

1. G. S. BECKER, "Underinvestment in College Education," *Am. Econ. Rev. Proc.*, May 1960, 50, 346-54.
2. D. S. BRIDGMAN, "Problems in Estimating the Monetary Value of College Education," *Rev. Econ. Stat.*, Aug. 1960 Suppl., 42, 180-84.
3. A. CASWELL ELLIS, "The Money Value of Education," Dept. of the Interior, *Bureau of Education, Bull.*, 1917, No. 22, Washington 1917.
4. IRVING FISHER, *The Nature of Capital and Income*. New York 1906.
5. ———, *The Theory of Interest*. New York 1930.
6. P. C. GLICK AND H. P. MILLER, "Educational Level and Potential Income," *Am. Soc. Rev.*, June 1956, 21, 307-12.
7. H. S. HOUTHAKKER, "Education and Income," *Rev. Econ. Stat.*, Feb. 1959, 41, 24-28.
8. ALFRED MARSHALL, *Principles of Economics*, 8th ed. London 1946.
9. H. P. MILLER, "Annual and Lifetime Income in Relation to Education: 1939-1959," *Am. Econ. Rev.*, Dec. 1960, 50, 962-86.
10. JACOB MINCER, "Investment in Human Capital and Personal Distribution of Income," *Jour. Pol. Econ.*, Aug. 1958, 66, 281-302.
11. SIR WILLIAM PETTY, "Political Arithmetic" (first published in 1676), *The Economic Writings of Sir William Petty* (Charles Henry Hull, ed.), Cambridge 1899, Vol. I, pp. 233-313.
12. JOAN ROBINSON, *The Accumulation of Capital*. Homewood, Ill. 1956.
13. T. W. SCHULTZ, "Capital Formation by Education," *Jour. Pol. Econ.*, Dec. 1960, 68, 571-83.
14. ———, "Education and Economic Growth," in *Social Forces Influencing American Education*, H. G. Richey, ed., Chicago 1961.
15. ———, "Human Capital: A Growing Asset," *Sat. Rev.*, Jan. 21, 1961, 37-39.
16. ———, "Investment in Human Capital," *Am. Econ. Rev.*, March 1961, 51, 1-17.
17. ———, "Investment in Man: An Economist's View," *Soc. Service Rev.*, June 1959, 33, 109-17.
18. ELBRIDGE SIBLEY, "Some Demographic Clues to Stratification," *Am. Soc. Rev.*, June 1942, 7, 322-30.

*The author is assistant professor of economics at the University of Kansas. He is indebted to Juliet Shaffer, Darwin Daicoff, and Charles Staley for valuable suggestions.

19. ADAM SMITH, *The Wealth of Nations*, Modern Lib. ed., New York 1937, 265-66.
20. *Time Magazine*, March 1961, p. 22.
21. J. R. WALSH, "Capital Concept Applied to Man," *Quart. Jour. Econ.*, Feb. 1935, 49, 255-85.

Investment in Human Capital: Reply

I am surprised and pleased that under the restraints of a presidential address to the American Economic Association, enough could be said to warrant so careful and valuable a comment. Harry G. Shaffer discusses some of the minor difficulties that arise in practice in distinguishing between consumption and investment expenditures in the formation of human capital and then examines in considerable detail, and in my judgment correctly, some major difficulties in identifying and measuring the earnings (return) that are associated with a particular investment in man. Shaffer does not object to the concepts of investment in man and human capital; on the contrary, he explicitly accepts the underlying theory. He is, also, careful to disassociate himself from those who believe that it is morally wrong to apply the concepts of investment and capital to people. However, if any new knowledge were attainable by the use of these concepts, despite the empirical difficulties, Shaffer appears to believe that such knowledge would be grossly misused—by implication, more so than other economic knowledge—in making policy decisions. This view of the relation between economic analysis and policy seems unreal and irrelevant.

Shaffer's first point is addressed to the question: When are educational expenditures consumption and when are they investment? This question deserves careful investigation because so much depends upon the correctness of the answer. To follow the conventional procedure of treating all such costs as serving only current consumption will not do. But to allocate all of these costs to investment in future earnings, is fully as extreme and unwarranted. Although the economic logic for allocating the costs of education is clear and compelling, no one has as yet developed a wholly satisfactory empirical procedure for identifying and measuring the particular resources that enter into each of these components. Faced with this difficulty, any allocation that one makes, based on such clues as seem relevant, must in all honesty be labeled "arbitrary." There is little intellectual comfort in the fact that a similar brand of arbitrariness characterizes other areas of analysis, for example, in the way expenditures for electricity and for automobiles used by farmers are divided and distributed between household and farm expenses, or the way a part of the costs of some private residences used for offices, libraries or studies are treated as business expenses.

In discussing the central question of allocating resources between consumption and investment, Shaffer emphasizes two facts, namely that most students attend public schools, and that up to a certain age school attendance is compulsory. But neither of these facts is relevant to a logical basis for distinguishing between consumption and investments. If education were altogether free, a person would presumably consume of it until he were satiated and "invest"

in it until it would no longer increase his future earnings. If a part of the education expenditures were borne on public account, the direct private costs of education would of course be less than the total costs of education, and to the extent that such education increased the future earnings of the student, his private rate of return to what he spent on education would be higher than the rate of return to total educational expenditures entering into this part of his education. Thus, private incentives to consume and to invest in education are affected by public educational expenditures, but the fact that there are such public expenditures has no bearing on the question whether education is consumption or investment. The fact that some schooling is compulsory is also irrelevant to the question at hand. To argue that it applies is analogous to saying that a city ordinance which requires private owners of houses to install plumbing and sewage disposal facilities is a factor in determining whether such facilities are a consumer or producer durable. Clearly, the compulsory city ordinance does not provide a logical basis for distinguishing between these two types of durables.

Although Shaffer is clear in seeing the positive effects of education upon the future earnings of students, he believes that the economic motivations of students and parents to invest in education is weak or even nonexistent. They are, in Shaffer's view, strongly motivated as consumers of education but only weakly or not motivated at all as investors in education. Such a dichotomy with respect to economic motivations is far from convincing. It is undoubtedly true, as Shaffer points out, that some education is wholly for consumption, and obviously in that case there would be no investment opportunity, hence no bases for an investment motivation. But are there no economic motivations in the case of students who attend our medical schools, schools for dentists, lawyers and engineers to invest in each of these particular skills with an eye to increases in future earnings? I am sure that the prospects of larger future earnings play a strong motivating role in these situations. Let me observe again, however, that private incentives either to consume education or to invest in it are affected by the amount and the nature of public expenditures for education. It is of course true that any attempt to explain total behavior with regard to the allocation of all public and private resources entering into education, takes one beyond the scope of the conventional private economic calculus of people. In studying the responses of private individuals to whatever investment opportunities education affords, it should be borne in mind: (1) that where the capital market does serve human investment it is subject to more imperfections than in financing physical capital; (2) that most investment in people, notably in the case of education, is in a long-period capacity, for it has a relatively long life and it is thus subject to the additional uncertainties which this implies; (3) that many individuals face serious uncertainty in assessing their innate talents when it comes to investing in themselves; and (4) that our laws discriminate against human investments [3]. These factors affect the observed responses, and their adverse effects may be confused with the real economic response, other things equal, to a given rate of return which is then thought to be weak or nonexistent.

Let me do no more than restate the effects of education upon consumption and earnings. The consumption component of education is either for current consumption, satisfying consumer well-being in the present, like food, or for future consumption, like houses. Education can also improve the capabilities of people and thus enhance their future earnings. The investment formed by education is, therefore, of two parts: a future consumption component and a future earnings component.

In "Education and Economic Growth" [4], in examining education for consumption, I emphasized the current consumption component. It is now clear to me that most education that satisfies consumer preferences is for future consumption and that this component has substantial durability and it is, therefore, to the extent that it serves consumption, mainly an *enduring* consumer component, even more so than other consumer durables. As an enduring consumer component, it is the source of future utilities (and thus this component, also, contributes to future real income) which in no way enters into *measured* national income.¹ This component accordingly is like investment in houses, automobiles, refrigerators and the like. Thus we have the following: (1) education for current consumption (which, it seems to me, is of minor importance); (2) education for long-period future consumption, making it an investment in an enduring consumer component, which is undoubtedly of considerable importance; and (3) education for skills and knowledge useful in economic endeavor and, thus, an investment in future earnings [5].

Shaffer's second point, which presents a number of the real difficulties that arise when one attempts to identify and measure the increase in earnings that are associated with education, is well founded. Differences in innate abilities, race, employment, mortality, and family connections all enter and must be faced. It should not distract from the merits of his presentation to observe that these several difficulties are very much in the forefront in the work of economists who to my knowledge are engaged in studying this set of problems. The forthcoming study by Becker [1] will be a landmark on this score as well as on other relevant theoretical and empirical issues. A major new study by Denison [2] is both bold and original in bringing aggregate analysis to bear on the *sources* of economic growth in the United States. He finds education to be one of the major sources of economic growth after adjusting for differences in innate abilities and associated characteristics that affect earnings independently of education. Shaffer introduces a concept which he calls "maintenance costs" which in terms of the studies available to him has been neglected. But Weisbrod [6] in his paper "The Valuation of Human Capital," builds on "the proposition that the value of a person to others is measured by any excess of his contribution to production over what he consumes from production—this difference being the amount by which everyone else benefits from his productivity." Weisbrod then proceeds to estimate the relevant consumption, or

¹ Immediately following my presidential address, "Investment in Human Capital," Abba Lerner pointed out to me in conversation the role of future utilities from education and that this part of education also represented an investment. His logical and precise mind helped to clarify my thinking on this point and I am much indebted to him.

if you please, "maintenance costs" thus conceived, and subtracts such costs from gross earnings to obtain net earnings to be capitalized.

I am reluctant to tread upon the boulders Shaffer has collected in his comments on policy. I suspect, however, from what he says about them that they are conglomerates of compressed sand and at best weak materials for his conclusions. To have started off by lecturing "liberals" on their rationalization of federal aid to education, is not conducive to a calm and reasoned discussion of the policy implications of expenditures for education. If the argument were that the knowledge now available about the increases in earnings from education is still too fragmentary to be of any use whatsoever in making policy decisions, it would deserve careful consideration. If the argument were that knowledge about the effects of education upon future earnings will be misused by people and therefore any efforts to acquire such knowledge should be very much discouraged, this conclusion from such an argument would be patently false.

The principal source of Shaffer's confusion in discussing policy arises from his belief that, if it were to become known that particular forms of education pay in terms of increases in future earnings, policy decisions which took this fact into account would necessarily no longer take into account any of the other important contributions of education. People, including those who make policy decisions, are simply not that monolithic in their evaluation of education. Shaffer's implied apprehension that society will proceed to deny advanced education to women merely because most of them do not enter the labor market is a pure illusion. If Shaffer only means that knowledge about economic returns accruing from investment in human capital, in terms of future earnings, *should not* be the exclusive basis for public policy decisions in making expenditures for education, we are in full agreement. My view on this issue can be stated very simply: It is altogether proper that people should prize highly the cultural contributions of education and they will continue to do exactly that; but it is very short-sighted of us not to see its economic contributions. Education has become a major source of economic growth [5] in winning the abundance that is to be had by developing a modern agriculture and industry. It simply would not be possible to have this abundance if our people were predominantly illiterate and unskilled. Education, therefore, in addition to having high cultural values, is presently also an investment in people to the extent that it improves their capabilities and thereby increases the future earnings of people.

Shaffer says that there are specific studies which "clearly show . . . the income differential correlated with additional education is considerably higher for whites than for Negroes," and suggests the inference that less rather than more should therefore be spent on education for Negroes, provided this were the sole criterion. The specific studies in this case are based on national averages, making no adjustments for the effects of city size, different rates of unemployment, regions, and the quality of education. Nor is any account taken of the differences in the cost of education, including income foregone by the students, which is fully half of the total cost of college education. Furthermore, should there still remain a differential, as is to be expected because of discrimination, the relevant figure is not this income differential but the absolute difference

between the Negro who has, let us say, a college education and one who had only a high school education. The increase in earnings represented by this absolute difference is the reward to which one would turn in estimating the return on this investment. Zeman's [7] study, it seems to me, strongly supports the inference that differences in education are the major explanatory variable for the very large white-nonwhite income differentials in the United States.

Despite my serious misgivings about Shaffer's attempt to relate economic analysis and policy, I am, as I said at the outset, grateful to him for his most valuable comment.

THEODORE W. SCHULTZ*

REFERENCES

1. G. S. BECKER, has a major study on Investment in Education virtually completed for the Nat. Bur. Econ. Research, New York.
2. E. F. DENISON, *The Sources of Economic Growth in the United States and The Alternatives Before Us*, a study soon to be published by the Committee for Economic Development.
3. T. W. SCHULTZ, "Investment in Human Capital," *Am. Econ. Rev.*, March 1961, 51, 14-15.
4. ———, "Education and Economic Growth," *Social Forces Influencing American Education*, N. B. Henry, ed., Chicago 1961.
5. ———, "Education as a Source of Economic Growth," Paper No. 61-5, August 14, 1961, Dept. of Econ., University of Chicago.
6. B. A. WEISBROD, "The Valuation of Human Capital," *Jour. Pol. Econ.*, Oct. 1961, 69, 425-36.
7. M. ZEMAN, *A Quantitative Analysis of White-Nonwhite Income Differentials in the United States*, unpublished doctoral dissertation, Univ. of Chicago, 1955.

* The author is professor of economics at the University of Chicago.

The Differential Effects of Tight Money: Comment

In "The Differential Effects of Tight Money,"¹ Bach and Huizenga analyze several widely-held notions concerning the discriminatory impact of stringent monetary policy. The hypothesis receiving most of their attention, and the one to which this comment is addressed, is "that tight money led banks [in the period 1955-57] to discriminate against small borrowers in lending to businesses" (p. 59). They conclude that "widespread criticisms of tight money as unfairly discriminating against small borrowers, both in availability of loans and interest costs, are not supported by the data" (p. 79).

The purposes of this comment are to (1) question certain interpretations which the authors give to their data, (2) raise a question concerning the validity of their test of discrimination, and (3) examine the major assumption that underlies their analysis. These points are raised, not because my waning

¹ This *Review*, March 1961, 51, 52-80.

concern about monetary-policy discrimination has been revived but, rather, because the authors were not successful in dispelling it altogether.

Bach and Huizenga point out, as an exception to their general conclusion, the behavior of banks in the \$500-\$1,000 million deposit class, where discrimination against small-business borrowers is clearly evident. My specific question involves the interpretation of Table 5 (p. 66) which provides the basic data for banks in the \$100-\$500 million class. The authors state that "this evidence appears . . . clearly to reject the hypothesis that tight money led banks to discriminate especially against small borrowers" (p. 66).

A great deal of emphasis should be placed upon the qualification "especially" in the above quotation. Comparing, first, the percentage increase in loans to the largest borrower class as a proportion of the percentage increase to each of the four smallest borrower classes at both loose and tight banks, we find that the smallest-borrower classes fared relatively better at the loose banks. This indicates discrimination against small borrowers. A similar comparison of the second-largest borrower class with the four smallest-borrower classes reveals discrimination against the smallest of the latter, with the remaining three receiving relatively favorable treatment. Finally, comparing the third-largest business borrower class with the three smallest, we observe discrimination against the two smaller of the latter, with the next larger being relatively favored.

Thus, the medium-sized banks reveal a mixed bag of discrimination. While the generalization which Bach and Huizenga make is correct, it tends to submerge the observation that borrowing firms with up to \$5 million total assets fared less well relative to the largest-borrower size at the tight banks.

A second, more fundamental question may be raised with respect to the nature of the test of discrimination utilized in the study. Briefly, the assumption was made that discrimination against small business could be demonstrated "if tight banks increased loans relatively more to large (compared to small) borrowers than did comparable loose banks" of the same size (p. 65). Thus, assuming demand for loans was equal at tight and loose banks of comparable size, observed discrimination by tight banks could be attributed to tight money, since loose banks were relatively unrestrained by growing monetary stringency in the period 1955-57.

The usefulness of this ingenious test is clouded by the adoption of a measure of tight and loose banks which is of doubtful reliability. Since banks in each size category were ranked according to degree of looseness and conclusions drawn upon the basis of lending behavior in loose, medium and tight banks, the classification process is crucial.

Briefly, banks were first divided into two halves according to their looseness as of October, 1955:

$$\frac{\text{free reserves} + \text{government bills and certificates}}{\text{deposits}}$$

A further bank-ranking was made according to increase in deposits between 1955 and 1957 in order to account for changes in looseness during the period

of monetary tightness. These two rankings were combined to identify tight banks by taking the 50 per cent of the tight half of the 1955 ranking that showed greatest increase in tightness 1955-57. The loose banks were selected by taking 50 per cent of the loosest half of the 1955 ranking that had the greatest increase in looseness over the period. The remaining banks were classified as "medium."

A substantial question arises as to whether the 1955 looseness ratio leads to a ranking which actually reflects the loan expansion potential of individual banks. My chief doubt is generated by the authors' selection of government bills and certificates as a measure of liquidity in the ratio numerator. Even if we accept their reason for not including government securities maturing in more than one year (p. 57n), the exclusion of government securities maturing within one year other than bills and certificates is cause for concern. Certainly these other notes and bonds maturing in less than a year are as liquid as bills and certificates of equal maturity.²

As of October 1955, the date for which banks were ranked initially into tight and loose categories, commercial bank-held government securities maturing within one year totaled \$8,654 millions, of which bills and certificates accounted for \$4,828 millions. Thus, approximately 44 per cent of marketable maturities within one year held by commercial banks were neither bills nor certificates.

On the assumption that these other securities are as liquid as bills and certificates, their inclusion in the ratio numerator might well have led to a rank-ordering of banks substantially different from that of the authors. A single bank which has its one-year maturity needs adequately met by "old" notes and bonds is unlikely to have bills and certificates. Other things equal, this bank would be ranked tighter than was actually the case, using the Bach-Huizenga looseness ratio.

Furthermore, is it not likely that the actual looseness of a bank is partially determined by its deposit-mix? According to the looseness formula, two banks of equal total deposits and highly different ratios of time to total deposits (and therefore presumably unequal liquid asset requirements) can be classified in the same group, if in fact their liquid asset position is equal. The high time-deposit bank, under these conditions, would be clearly looser than the high demand-deposit bank in an operating sense. Would further stratification of banks by time-deposit ratio provide a stronger test of the hypotheses?

The validity of the discrimination test applied by the authors to their data depends quite crucially on their assumption that "borrower loan demand was presumably substantially identical at loose, medium, and tight banks . . ." (p. 66). While this assumption cannot be verified, two reasons for doubting it can be offered. First, the fact that banks were classified as tight indicates the possibility that their loan demand was higher prior to 1955 than that of loose banks. One is tempted to assume that this difference continued during the period of tight money. Secondly, it seems reasonable to suppose that large

² The authors list this exclusion as a weakness of the looseness ratio but do not indicate the reasons for it (p. 57).

borrowers would shift from banks that could not supply all of their credit expansion demand during the period to those that could. Large corporate borrowers at the prime rate are not tied to a single bank relationship, while the alternatives of the small firm are distinctly limited.

DEANE CARSON*

*The author is associate professor of economics at Brown University.

The Differential Effects of Tight Money: Reply

Professor Carson expresses four doubts about our conclusion that "widespread criticisms of tight money as unfairly discriminating against small borrowers . . . are not supported by the data." We are pleased to comment briefly on his points.

1. First, with reference to banks of \$100-\$500 million deposits, he accepts our general conclusion, but suggests that the banks showed a "mixed bag of discrimination" and that, in fact, borrowers with less than \$5 million assets appear in some instances to have fared less well under tight money than did the largest borrowers. Carson is right that there is not a simple, monolithic relationship between size of borrower and tightness of banks shown in Table 5 of our article (p. 66). In that sense the picture shown is "mixed," as he says. So it often is in complex comparisons involving relative changes in multiple subgroups. We presented the complete data so each reader can make his own interpretation. But in such cases it is customary also to help by a summarizing device, and we did this in Figure 4 (p. 70) which presents the data of Table 5, with least-squares lines fitted. It is obvious that the slope of the solid (tight banks) line is far less than that of the dot-dash (loose banks) line, indicating that over-all the data contradict the hypothesis of special discrimination against smaller borrowers by tight banks. This, we believe, is the significant finding for the general argument that tight money discriminates strongly against small borrowers, for example as it is often advanced before Congressional committees.

2. Carson questions our major conclusion because our 1955 measure of "looseness" included only bills and certificates, rather than all government securities maturing in less than one year, in the basic ratio:

$$\frac{\text{free reserves} + \text{government bills and certificates}}{\text{deposits}}$$

He correctly points out that commercial-bank holdings of other government securities maturing in less than a year were nearly as large as were those of bills and certificates, and that such other government securities were also highly liquid. He suggests that the inclusion of these other governments in the numerator "might well have" led to a substantially different rank-ordering of banks and hence to a different ultimate outcome of the study.

The main reason we used only bills and certificates was that they were the only data available for individual banks in the call reports we used. Data on government securities maturing in less than one year come from special Treasury Department surveys and were not available in the individual bank detail needed for our study. But we did investigate the possibility raised by Carson, on a very small sample basis. This suggested that their inclusion would probably change the conclusion very little. More important, we know of no reason to suppose *a priori* that, with the other near-due governments included in the ratio, the rank-ordering would be changed in such a way as to show more discrimination against small borrowers, nor has Carson suggested any. It is important to note that merely a different rank-ordering would not necessarily change the tight-money findings; the new rank-ordering would need to produce a different pattern of lending behavior vis-à-vis large and small borrowers. Thus, Carson must be permitted his speculation that things "might be" different with the other data, but speculative "might be's" carry weight only with theoretical or empirical support. The evidence seems to us to stand as we presented it. If he can find a way of testing the hypothesis using his suggested data, we hope he will do so.

3. Carson questions whether our results might not have been different had we further subclassified banks by their demand-time deposit mix. Perhaps they would. With a third of a million punch cards and 25 reels of computer tapes of data, tests of further detailed hypotheses are far from costless in time and money. We saw no reason *a priori* why this further stratification would add significantly to the findings. The comments in the last four sentences of the preceding paragraph apply here too.

4. Carson questions our basic assumption that borrower demands were substantially identical for borrowers of given sizes and industries at tight and loose banks in the various bank-size classes, for two reasons. First, he says loan demands were possibly larger at tight banks in 1955, and may also have been so in 1957. Perhaps; but tightness in 1955 reflected heavy losses of reserves through deposit shifts (especially from the tight large city banks), as well as strong loan demand. Our general answer to doubts on the crucial assumption is given in the description of the design of the sample of banks used for the test and in footnote 14 on page 65. We checked the factors that seemed *a priori* likely to invalidate the assumption, and to the best of our ability couldn't find any substantial evidence undercutting the assumption.

Carson's second suggestion is related but different—that large borrowers with wider credit acceptability may have escaped the squeeze of tight money by shifting to loose banks. Since this seems *a priori* likely and the data are consistent with the possibility, we attempted in the study to estimate the quantitative importance of this effect, but with little success. Such large-borrower shifts were very unlikely to be of major importance in explaining the results shown, however, because there were few loose banks in the system large enough to service many large borrowers, who almost never borrow from small banks for obvious reasons. For example, there was not a single loose bank in either of

the two largest size classes, which include all banks with deposits over \$500 million (see pp. 68-69).

G. L. BACH AND C. J. HUIZENGA*

*The authors are, respectively, professor of economics at Carnegie Institute of Technology and acting assistant professor of business economics at the University of California, Los Angeles.

Measuring the Success of the Elementary Course: Comment

The controversy over measuring the success of the elementary course between Whitney [3] [4] and Rockwood and Harshbarger [2] left too much unsaid.

First, Whitney should be commended for pioneering something that very much needed doing. As the illustrious example of Keynes's *General Theory* testifies, any pioneering effort is likely to seem crude and imperfect compared to the ideal.

Second, objective tests can be expected to measure *directly* success in achieving only part, and not the most important part at that, of our objectives, namely, how well we have drilled our students in the fundamentals of the subject (e.g., elementary supply and demand concepts, the law of diminishing returns, etc.). They cannot test higher intellectual achievement; they cannot test how well the course contributes toward the larger aims of a liberal education, toward stimulating sophomores to think for themselves, toward freeing their minds from the shackles of their own limited experience.

Third, Whitney's results suggest (and I am confident that improved tests will confirm the initial findings) that we are not very good drillmasters. Foreign language teachers, who have two big advantages over us (usually a two-year requirement and a subject that changes hardly at all from decade to decade) are much better. We can accept Whitney's findings that we are not doing very well in this phase of our teaching and still agree with Rockwood and Harshbarger (as Whitney himself does) that the elementary economics course is very much worth while, pulling its weight in the curriculum of a liberal education.

Fourth, efforts to improve Whitney's objective tests are important because there will be a strong correlation in the future between our improvement as drillmasters and our improvement at achieving higher aims. The firmer the students' grasp of economics fundamentals,¹ the more we can open their minds on the great problems of economics;² and we need to know just how much we are improving with the fundamentals. Let us then, instead of carping at

¹I anticipate that in a few years' time we shall be able to do much better at drilling by adopting the technique of programmed instruction used by Holland and Skinner in teaching psychology [1].

²Of course, we must not fall into the trap of neglecting the higher aims for the sake of a good showing on Whitney's tests.

the shortcomings of Whitney's tests, encourage (and help) him to improve them.

RENDIGS FELS*

REFERENCES

1. J. G. HOLLAND AND B. F. SKINNER, *The Analysis of Behavior*. New York 1961.
2. C. E. ROCKWOOD AND R. B. HARSHBARGER, "Measuring the Success of the Elementary Course: Comment," *Am. Econ. Rev.*, March 1961, 51, 144-46.
3. S. N. WHITNEY, "Measuring the Success of the Elementary Course," *Am. Econ. Rev.*, March 1960, 50, 159-69.
4. ———, "Measuring the Success of the Elementary Course: Reply," *Am. Econ. Rev.*, March 1961 51, 147-49.

*The author is professor of economics at Vanderbilt University.

BOOK REVIEWS

General Economics; Methodology

Franz Böhm: Reden und Schriften. Edited by ERNST-JOCHIM MESTMÄKER.
Karlsruhe: C. F. Müller, 1960. Pp. 340.

This *Festschrift* gives us an opportunity to know a distinguished member of a small but influential group of liberal German economists, men whose liberalism is indigenous, not imported. Professor Böhm has been lawyer, economist, university professor, minister of culture. He is now one of the editors of the economic yearbook, *Ordo*, a professor at the University of Frankfurt, and a member of the federal legislature. Böhm and the group of like-minded economists, known as the Freiburg School, have achieved a major success in the introduction and passage of the 1957 antitrust legislation in Germany; and they continue to be influential in current economic policies. Böhm led the delegation negotiating the treaty with Israel for payments to make some amends for the actions of the National Socialistic government, and he saw the bill for reparations through the legislature. He was granted an honorary degree by the New School for Social Research and awarded the Stephen S. Wise prize in 1956, but in general he remains unknown in this country.

The writings and speeches here collected deal with fundamental problems of economic policy for an unregimented economy, with anti-Semitism and the reparation for Nazi injustices, with the dictatorship of Hitler and resistance to it, and with the conflict between the communist and liberal world.

In economic policy, he is interested in the establishment of a framework within which individuals in an unregimented society can live, prosper, and seek the good life. One might well say of Böhm and his group what Lionel Robbins said of the English classical economists:

. . . they . . . believe that without a firm framework of law and order, harmonious relations between individuals are unlikely to come into being; . . . The invisible hand which guides men to promote ends which were no part of their intention, is not the hand of some god or some natural agency . . . it is the hand of the lawgiver, the hand which withdraws from the sphere of the pursuit of self-interest those possibilities which do not harmonize with the public good. (*The Theory of Economic Policy*, p. 56.)

Böhm has said the same thing in slightly different terms (e.g., p. 95). This task of establishing a matrix for economic freedom is the primary concern of the Freiburg School. They are much more preoccupied than we are with the relation of particular policies to freedom.

In dealing with National Socialism and anti-Semitism, he is completely frank and extenuates nothing. In the ideological conflict between East and West, he attaches no sanctity to the market economy but defends it vigorously on practical grounds. On monopolies he is more absolute than many experts

in this country, defending the proposition that: if the technical processes of production seem to make the monopoly problem insoluble, it must nevertheless be solved to protect the public against dominance by economic might.

Böhm's liberalism is no postwar development. In the 1920's he was fighting against the rights of cartels under the then German law. In the 1930's he escaped concentration camp, but lost his position as professor because he was considered dangerous to the National Socialist state. One might at first glance classify Böhm as an unsophisticated, mid-nineteenth century liberal with a nonconformist conscience, concerned about economic freedom, equality, and fraternity. Like the great scientist, he can wonder at, and see mystery in, ordinary simple events; and with less restraint than Marshall, he considers the relation of economic conditions to ethical problems. All this may seem a bit naïve; but if Böhm is to be characterized as a nineteenth century liberal, it must be added that he is a liberal who has seen, and well remembers, two world wars, two catastrophic inflations, a devastating depression, and the disintegration of integrity under the Nazi terror—together with the economic resurgence of Western Germany at the present time. Having seen all this he cannot but take an historical perspective on economics, and he cannot divorce economics from political and social events. Like Keynes, he wants a well-functioning economy to make possible a worth-while society; and he fully appreciates the evils that a bad economic-policy may engender. He prescribes, modestly, only for the realm of economic policy; but he is not indifferent to the rest. In all matters of policy, and in all economic and philosophical speculations, he rests his case not on metaphysics but on the empirical standard, "By their fruits ye shall know them."

RICHARD C. BERNHARD

*University of California
Riverside, California*

Challenge to the American Economy. By RENDIGS FELS. Boston: Allyn and Bacon, 1961. Pp. xvii, 708. \$7.95.

In the *American Economic Review* a few years ago¹ Rendigs Fels described "a new approach to teaching elementary economics." He discussed objectives, content and organization of the course, and the characteristics of the ideal text. It should not be surprising that *Challenge to the American Economy* is largely successful in meeting the prescriptions laid down by Fels for the ideal text. But it is not often that a reviewer (or potential user) has available from the author such a detailed argument for a particular content and organization. The book presents basic economic ideas, using policy problems as a vehicle. In the process, it acquaints the reader with some basic economic facts and institutions; it exposes the reader to a consideration of value judgments relevant to economic policy problems; it indicates traditional ways of thinking about the U. S. economy, together with criticisms that have led to modification; it prepares students for advanced courses by including a substantial amount of abstract economic theory.

¹ Rendigs Fels, "On Teaching Elementary Economics," *Am. Econ. Rev.*, Dec. 1955, 45, 919-32.

With the possible exception of a consideration of value judgments, the majority of introductory texts in print meet these purposes—but not in the manner prescribed. Most elementary texts that I have inspected mix abstract economic analysis with policy issues in successive chapters or sections of chapters. Abstract supply and demand analysis is presented, then the farm problem is discussed. Marginal cost, marginal revenue, and the equilibrium of the firm are treated abstractly, then monopoly and antitrust policy are considered. Whether the sequence is abstract theory, then policy problem, or, less commonly, policy problem followed by abstract theory to deal with it, the student's path is a bumpy one at best, a succession of insurmountable obstacles at worst. A few have met the difficulty by removing most of the principles from the principles of economics course, but this will not satisfy very many teachers and it is not Fels' solution.

Fels has a specific list of basic economic ideas that he wishes to teach.² He builds a narrative, centering on policy issues, that introduces these concepts and relationships in relatively simple terms. This is the nature of Part I, The Price Mechanism, and Part II, Mainly Macro, which together make up two-thirds of the book. Sometimes a numerical example supplements the definition of a concept, but algebra and the apparatus of diagrams do not intrude. They are left to Part III.

Other characteristics of Parts I and II are worthy of mention. Definitions of terms are carefully drawn. Section headings frequently are used to make the reasoning process explicit. Fels indicates the limits of analysis and where value judgments enter in. He presents his own position on policy issues at many points to alert the reader to possible bias on the author's part. Each chapter has discussion questions appended, most have suggestions for further reading, and several have useful problems.

Through two-thirds of *Challenge to the American Economy*, the reader has discovered the importance of economic theory in an interesting and relatively smooth-flowing presentation, and he has been exposed to quite a lot of theory as well. In fact, most of the concepts and relationships treated in Part III (entitled The Tools of Economic Analysis) have been defined and used in Parts I and II in conjunction with description and policy problems. What, then, is the function of Part III? It is to give the student a concentrated exposure to abstract economic reasoning, and practice in using it. The exposure is necessary if prospective economics majors are to get some idea of economics as an intellectual activity. This is one of the objectives of most introductory courses. Practice in using theory is necessary if at least some students are to develop what Fels calls a writing knowledge (as compared to a reading knowledge) of economics.

Part III is rigorous and abstract. It presents economic analysis in words, in simple algebra, and in diagrams. It is interlarded with problems. Fels objects to workbooks because they do too much of the work for the students. He argues that setting up a problem is crucial to understanding it, and I heartily agree with this position. Students are moved toward a writing knowledge of economics by the problems of Part III.

² *Ibid.*, p. 925, n. 11. His text contains a number of additions to this list.

There are several elements of novelty in *Challenge to the American Economy*, but the most important is the segregation of abstract economic theory, particularly the algebraic and diagrammatic approaches, at the end of the book, while introducing economic theory in a simpler, less rigorous form in connection with policy problems first. This is an intriguing and sensible approach that I should like to try; but I am disappointed that Fels did not go farther in this separation. An example or two should suffice. On pages 94 and 95 he deals with the differences between shifts of supply and demand schedules and movements along such schedules. Of course, such a distinction must be made, and might be made at this point in his book, but would it not be better to hold off using *these specific terms* until the student has been introduced to the diagrams that permit a visual impression of such shifts? Again, on page 140, Fels distinguishes between marginal revenue product of labor and the value of his marginal product, when introducing the marginal concept in a chapter entitled "Wages and the Last Straw." I shall admit that in one's first major departure from a traditional approach it is difficult to stick to the principle of the departure throughout. Fels recognizes this by ending the pertinent paragraph on page 140, with "It is best to ignore such complications. . . ." I agree, at least until Part III.

Challenge to the American Economy is an important contribution to the literature on teaching methods in economics. It makes possible an easy adoption of the persuasive arguments that Fels presents in his preface and in his communication in this *Review* referred to above. Beyond this, the book has greater flexibility in use than other introductory economics texts. Fels would find it difficult to follow his method with any other text. But those who do not accept Fels' arguments would have no difficulty adapting his text to their own particular approach. It is a superior elementary economics text no matter how you slice it.

KENYON A. KNOFF

Grinnell College

Fundamentals of Economics. By RUBY TURNER MORRIS. New York: The Ronald Press, 1961. Pp. xvi, 878. \$7.00. Accompanying workbook, \$2.75.

In a recently overheard discussion of the promotion of a college teacher through the academic hierarchy, one of the participants directed attention to the need for favorable judgment on the part of the college president, the man's department, the body of full professors, and the students. A colleague, expressing surprise at this statement, remarked that promotion was chiefly dependent upon the traditional categories of professional merits—publications, teaching, personality, and academic entrepreneurship. Only later did it dawn on these two analysts that, while each had touched upon essentials, the first, a political scientist, was attracted to a formulation that identified the locus of power and authority; the second, an economist, assumed the institutional power framework and set forth the criteria upon which rational judgment might be based.

This vignette illustrates general problems in social studies. Thus the analysis of human behavior requires the identification of a wide range of variables grouped into sets or categories, each category defined in some kind of institu-

tional terms. Special relationships among variables and among categories will command most of the economist's attention. Some variables, some categories, and some relationships will, at certain stages of analysis, be assumed as given—a fixed structure; others will then be operated upon analytically. Throughout, difficult problems of aggregation and synthesis are to be expected.

Ruby Turner Morris' text, *Fundamentals of Economics*, is a well-written and comprehensive discussion of virtually all of the variables, categories, and relationships significant to economics. Detail and generalizations are purposefully blended and profusely illustrated both in the writing and in many graphs and charts. Probably no other text has used illustrations to so good an effect. The author has succeeded admirably in conveying to students and instructors a vivid picture of the economy. Equally apparent is that rare gift of anticipating difficulties that students will encounter in analysis and of explaining such matters with special care.

The book proceeds from micro- to macroeconomic analysis, an approach to which other writers are now reverting. This bespeaks an increasing and commendable emphasis upon a more inductive method of study. Mrs. Morris' pragmatic, affirmative, and sometimes prescriptive attitude towards economics suggests yet another trend that will be well received. For example, writing about government finance in time of war when inflation is a major problem, she says: "On no account should bank credit be drawn upon as this will only make matters worse by augmenting the money supply" (p. 654).

Five chapters are devoted to illustrative problems in supply and demand. The topics treated are public utilities, monopolies, wholesale and retail trade, agriculture, and consumer economics. The discussion of wholesale and retail trade and the earlier treatment of monopolistic competition are top-flight. The complex issues of "fair trade" are beautifully handled right down to specific price changes at Gimbels following the Schwegman Case wherein the Supreme Court held that nonsigners of fair-trade agreements were unaffected by their terms. On agricultural policy the author answers questions that are too often left untouched in other writing.

Unlike the partial perspectives symbolized by the views of my friends the political scientist and the economist, Morris' views of economics include about all of the significant angles of study. Indeed, it is only in a few matters of combining or aggregating economic relationships that some strengthening of the presentation might have been desirable. Thus the optimizing nature of the economic system as a whole is not dealt with at sufficient length; the conditions for equilibrium within and between product and factor markets are not fully developed along with the related matters of individual consumer and factor equilibrium. Perhaps, as has sometimes been done, such a treatment best includes the role of prices in a socialist state. As it is, socialism finds its more usual place in a next-to-last chapter where, along with fascism and communism, it is described pretty much as the organization of political and economic power.

There is ambiguity in the presentation of national income aggregates. At the outset of the discussion reference is made to savings (*S*) and investment (*I*) in the "Keynesian sense" (p. 604) and I take this to mean that savings equals

investment *by definition*. But later, $S = I$ is made an equilibrium *condition* (p. 607). The exposition would have been markedly clearer if emphasis had been given to planned or *ex ante* versus realized or *ex post* magnitudes since the equilibrium condition, $S = I$, is an equality between scheduled or planned magnitudes. In Chapter 27, "National Monetary and Fiscal Policies," one of the common expressions for national income (Y) appears, namely, $Y = C + I + G$ where G represents government expenditures and C , consumption expenditures. But a question arises as to whether G is the usual purchases of goods and services or a more narrowly defined category of government investment. The doubt is due to the author's use of the equation $S = I + G$ (p. 667). The more orthodox expression which includes taxes (T) is: $S + T = I + G$. It has the merit of requiring no definition of "government investment" and of conforming to the Commerce Department's accounting for government surplus or deficit as part of gross saving.

At two places in the text one notes that aggregation of relationships is presented in an oversimplified manner. In Chapter 14 on income distribution we read: "Aggregate the demands of all the producers of the country and you obtain the national demand schedule for labor" (p. 325). Coming on the heels of a discussion of the derived demand for labor under conditions of partial equilibrium, this statement might better have been qualified. In Chapter 15 on collective bargaining we find that if wages rise by an amount equal to the change in marginal revenue product, "... no unemployment, or for that matter no inflationary pressure, will be occasioned ..." (p. 369). And this neglects income-spending effects that may be induced by the rise in wages.

In summary, I have found that *Fundamentals of Economics* is a good, solid text with outstanding strength in microeconomics. Among its many merits are the clarity and style that will make it an attractive book from which to teach and to learn.

JOHN E. MAHER

Michigan State University-Oakland

Price and Allocation Theory; Income and Employment Theory; History of Economic Thought

Inflation. By THOMAS WILSON. Cambridge: Harvard University Press, 1961.
Pp. 280. \$5.50.

This book presents a qualitative analysis of the sources and process of inflation and discusses a wide variety of policy measures that have been used or might be used to stem or prevent inflation, ranging from general financial planning to socialized wholesaling, control of investment, foreign exchange controls, and the control of costs and prices. Though it contains some numbers and many references to experience, these are all strictly illustrative. The analysis is verbal, neither mathematics nor graphs playing any appreciable role. The book has no clear central thesis in either theory or policy and contains little that is new. It is a rather longer version of the kind of eclectic survey that an efficient and competent civil servant might prepare for his policy-making superior: reportorial, nonrigorous, largely undocumented, self-

consciously impersonal; concerned more with summarizing the current state of opinion and the range of views held than with presenting a thesis, yet at the same time peppered with personal normative judgments. As a result, the book is of interest rather more for what it reveals about the current state of professional opinion than for what it has to teach about inflation.

By relegating money to a minor supporting role in the analysis of deep depression, the Keynesian revolt fostered the fashion of treating inflation too as a nonmonetary phenomenon—a transfer, incidentally, of which Keynes himself was not guilty. The book mirrors this tendency though there are some indications that Wilson has no great enthusiasm for it. Nearly the first half of the book deals with the inflationary process in Keynesian nonmonetary terms, money entering only via the unanalyzed assumption that “additional funds . . . are readily available in the form of idle money or provided without limit by the banks at unchanged rates of interest” (p. 32). The key notion in this part is that inflation reflects inconsistency among the “real” plans of different groups in the economy.

The brute facts of postwar experience have produced a rise in the importance attributed to money. The book mirrors this counterrevolution as well. Not quite a third of the book is devoted to monetary factors, including the effectiveness of monetary restraint in limiting expenditures and of monetary policy in imposing restraint. Moreover, this part of the book has more life and vigor than the wooden pages dealing with planning inconsistencies.

The postwar counterrevolution has not simply been a return to a prior orthodoxy. Money has been attributed importance, but only, as is so often said, indirectly as a factor affecting interest rates and, through interest rates, investment, not as a direct factor affecting expenditures—a distinction that a fuller examination than is possible here demonstrates to be largely specious. The book is again a faithful mirror. The discussion of monetary factors is almost entirely in terms of “credit” effects, i.e., effects of monetary policy and measures on market rates of interest and terms of lending, and only incidentally in terms of “monetary” effects, i.e., effects on the stock of money and of the stock of money on economic activity.

The book has major defects in manner and matter that are present also in much of the literature it surveys and reflects. In manner, the major defect is lack of rigor. The book’s manner is precisely that which Pareto and his fellow mathematical economists scorned as “literary economics.” Just as mathematics is a language, so words are symbols and there is nothing to prevent verbal analysis from being every bit as logical and rigorous as formal mathematical analysis. But it is far easier with words than with formal mathematics to be illogical just as it is perhaps easier with formal mathematics than with words to be irrelevant.

An example that both documents and illustrates the criticism of manner without trenching on controversial problems of matter is Wilson’s treatment of “liquidity.” “We shall,” he writes, “define liquidity as the ease with which an asset can be exchanged for money, defined in turn as currency and deposits. Liquidity will therefore depend upon (i) the costs, if any, involved

in selling an asset of which stamp duties and legal charges are examples, (ii) the time required to find a buyer and the trouble involved in doing so, and (iii) the risk of having to sell at a heavy capital loss" (pp. 187-88). "Ease" is hardly a self-explanatory or precise concept. Far from being a firm foundation for a "therefore," its precise meaning is presumably to be interpreted by what follows. But this is no easy matter. Item (i) can be immediately translated into the ratio of the current selling price to the current buying price. Item (ii) is much less obvious. Clearly the time and trouble can be zero if the asset is given away. A plausible rendering is to translate it into a function relating the time interval before sale to the ratio of the current net selling price to the expected net selling price after that interval, "trouble" being accounted for as a cost to be subtracted in computing the net selling price. Item (iii) is still less obvious. Capital loss measured from what price? Purchase price? Current selling price? When is a loss "heavy"? Possible translations are functions relating the interval before sale to (a) the probability that the selling price will be less than some arbitrary fraction of the current selling price, or (b) the expected value of the part of the distribution of selling prices below the expected selling price expressed as a fraction of the expected selling price (or maybe of the current selling price), or (c) the standard deviation of selling prices as a ratio to the expected selling price (though this violates the restriction to "capital loss"). And even if (i), (ii), and (iii) were translated rigorously and uniquely, how are they to be combined into "ease"? Is "ease" a scalar, as a later reference to liquidity as "a matter of degree" implies, or a vector? This example, while perhaps more striking and obvious than most, is not atypical.¹

With respect to matter, the most serious defects in this book, as in much other post-Keynesian literature, are the analysis of inflation as if it were capable of being a largely nonmonetary phenomenon and the analysis of monetary effects as if they operated entirely through a narrow range of market interest rates.

As something of a summary of his first 113 pages, Wilson writes, "Inflation may be regarded as a consequence of inconsistent planning when the supply of funds available for active circulation is elastic" (p. 114). This statement seems to me strictly parallel to one in a hypothetical book on poliomyelitis reading, "A polio epidemic may be regarded as a consequence of nonisolated living when the supply of polio virus available for active circulation is elastic." Certainly the best documented and most uniform empirical generalization about inflation is that a substantial rise in the general level of prices (e.g., larger than the standard error of estimate of price indexes) over a substantial period (e.g., more than two years) is accompanied by a rise in the stock of money per unit of output (money defined by any of the alternative common definitions) and that a substantial rise in the stock of money per

¹ A trivial example of lack of rigor of a different kind is the assertion in a footnote on p. 162 that "In the U.S.A. a gold reserve of 40 per cent has to be retained against the note issue." This has not been true since the Act of June 12, 1945 lowered the required ratio to 25 per cent.

unit of output over fairly brief periods (e.g., less than five years) is accompanied by a rise in prices. I know of no exception to this generalization and there have been many confirming examples for all parts of the world, all kinds of economic systems, and stretching over millenia. And the generalization has held whether money expansion was connected with the lending and investing process and hence with market interest rates, as in recent years, or with gold or silver mining, sweating and clipping, or straightforward fiat issue. Is there any comparable body of evidence about a uniform connection between inconsistency of planning and inflation—except that inconsistent planning is always with us?

The relegation to a qualifying clause of one of the most soundly based generalizations in economics is compounded by the defect of manner, namely, by a lack of logical rigor in the analysis of inflation as a consequence of inconsistent planning. Overly optimistic plans for “real” investment and “real” consumption, autonomous demands for higher wages or prices, autonomous rises in costs via rises in import prices, and so on, which are the kind of items Wilson introduces under the rubric of inconsistent planning, might produce inflation by inducing an expansion in the stock of money or in velocity and thereby in prices. If so, and if they were the major factors accounting for the rise in the stock of money or in velocity, it would be entirely valid to regard them as the ultimate source of inflation. But it is not enough to assert that these items might induce an expansion in the stock of money or in velocity; they might also do the opposite. A rigorous analysis requires that the theorist specify a systematic link between these items and the stock of money or its velocity that can be expected to produce changes in the indicated direction. In all the literature on this subject with which I am familiar, only one link has been suggested that is logically tenable, namely, a deliberate monetary expansion by the monetary authorities in reaction to unemployment created by the items in question. Wilson makes no use of this particular link in his analysis of cost inflation, though he does take pains to make it clear that a deliberate policy of monetary restriction would cut inflation short.

Wilson is quite aware that money expenditures, if not explicitly the stock of money, must increase in order for inflation to take place. But he is content to put this to one side for more than a hundred pages in the assumption quoted above that “additional funds . . . are readily available in the form of idle money or provided without limits by the banks at unchanged rates of interest.” The activation of “idle money” (never defined) is a possibility. Velocity can rise. But so also can it decline. Why should it do the one rather than the other? What is there about the changes that Wilson discusses that will induce or force holders of cash balances to reduce them relative to their expenditures? Wilson never even asks this question; he simply takes the answer for granted. To take a strictly analogous case from a problem in simple relative price theory: No doubt, income is readily available for most newspaper purchasers to pay a quarter instead of a nickel or a dime for a newspaper. Does this suffice to assure that the same number of newspapers will be sold at a quarter as at a nickel or a dime?

The failure to analyze the second part of the assumption is equally serious. If the stock of money is literally in perfectly elastic supply at a fixed (money?) rate of interest, then we are in Wicksellian unstable equilibrium. If the "natural" rate of interest happens to be higher than this fixed rate, the stock of money, prices, etc., will rise indefinitely, which is to say, until the "natural" rate happens to fall below the fixed rate; and conversely if the "natural" rate happens to be lower than the fixed rate. The key problem under these assumptions is where the *deus ex machina* of the fixed rate itself comes from, something about which Wilson is silent.

I cannot believe that Wilson means to assume what he says he does. But if he assumes something less extreme—say a positively sloping supply of money as a function of the nominal rate of interest—then a rigorous analysis requires that he analyze what there is about each of the changes he discusses that raises the stock of money demanded at a given interest rate and we are once again faced with the lacuna stressed in the second and third preceding paragraphs.

The three chapters Wilson devotes to monetary factors are far more satisfactory than the earlier chapters dealing with inconsistent planning and contain many acute and illuminating observations on specific problems of policy. Yet they are marred by concentration on what I have called credit effects to the almost complete exclusion of monetary effects. In the modern world, changes in the stock of money largely take place through the banking system, via the expansion or contraction of loans, the purchase and sale of marketable securities, and the like. It is extremely tempting to suppose that these channels through which the change in the stock of money occurs are also the channels through which the changed stock of money exerts its effect and hence that monetary changes are of significance only as they affect bank lending rates and other interest rates on a narrow range of marketable securities and as these in turn affect expenditures.

Such a view is far too narrow, as can be seen immediately by widening our horizon. Consider the European price revolution of the sixteenth and seventeenth centuries produced by the influx of precious metals from the New World; or the inflation after the gold discoveries of the 1840's; or after the gold discoveries of the 1880's and 1890's plus the development of improved methods of mining and refining; or the U. S. Revolutionary War inflation via Continental currency; or the Civil War inflations in both the North and the South. Only a few sentences in Wilson's three chapters are relevant to any of these episodes, yet as inflations they are members of the same species as modern episodes, differentiated by the channels whereby the increases in the stock of money occurred but not by the relation between changes in the stock of money and in prices. An understanding of the channels whereby changes in the stock of money may be produced is of course an essential part of the analysis of inflation. However, it is only the beginning of such an analysis, not the end.

MILTON FRIEDMAN

University of Chicago

Classical Keynesianism, Monetary Theory, and the Price Level. By SYDNEY WEINTRAUB. Philadelphia: Chilton Co., 1961. Pp. ix, 190. \$4.00.

As both an economist and part-time University administrator, I have been concerned for some time about the continuous and more recently rapid rise of the price level of consumer services, and more particularly of the price of higher education. I was aware of the continuous rise in salary levels of academicians and of the rise of other costs associated with teaching and research. I was also aware of the difficulty of defining the product (especially in tax-supported institutions) for purposes of the measurement of productivity and the construction of price indices. One would surely concur with the casual observation that the price of higher education, however defined, has risen in the postwar period. I have presumed that the reasons for this rise could be easily explained by examination of the aggregate demand, both current and anticipated, for these services in relation to the supply of factors which could provide the services. The same analysis I have presumed applied to many other sectors of the economy and hence to the aggregate level of prices.

Professor Weintraub in this collection of essays has provided us with different sets of social accounting identities or "truisms" which he feels illuminate more clearly the forces causing such price rises. Moreover, his "truism" supposedly focuses attention on the *one* variable which needs to be controlled, if, as a matter of public policy, we wish to achieve price stability.

Weintraub writes his WCM (wage-cost-mark-up) equation in its most significant form: $P = kw/A$. P , the price level is thus equal to w , the average wage level multiplied by k , the multiple by which proceeds exceed the wage bill and divided by A , the average product per worker. Since k is a constant, or nearly so, and A varies only slowly over time, P the price level "will largely respond to alterations in the money wage level."

Weintraub regards the causal nexus as going from wages to prices and prescribes some form of wage control as essential to achieving price stability without depression or intolerable unemployment. It is not perfectly clear who or what is responsible for the variability of money wage rates. Unions appear to be implicated; but management too may be irresponsible in their wage negotiations. In any event the proposed remedy is a public agency which will publicize wage changes which exceed productivity increases and thus lead to price increases.

In the case of the price of higher education it follows that either the American Association of University Professors (the academicians union) or university deans and presidents or both are behaving irresponsibly. Their efforts to raise faculty salaries and fringe benefits should be more adequately exposed. Controls may be hampered by devious schemes of deans to alter A , the average product per worker. Offers of reduced teaching loads and smaller class sizes can only lead to further inflation, and to no real benefit to society.

As has been pointed out by Lerner in his review of Weintraub's, *A General Theory of the Price Level*, in this journal (March 1961, pp. 121-43), the WCM theory and its policy prescriptions will not explain nor necessarily prevent an inflation of prices due to excess demand. Nor will such an analysis

explain the inflation of prices which occurs with the changing composition of final demand and the associated reallocation of resources. In this connection, Weintraub in this collection of essays does not in my opinion contribute significantly beyond his earlier work. If anything, he is somewhat more conciliatory toward his earlier critics in accepting occasionally the concept of a causal relationship between wages and prices going in the reverse direction. He still, however, would insist that an inflation cannot be sustained without an increase in w and therefore control of w is for him critical.

Monetary theorists, for whom Weintraub has little sympathy in his essays, could equally insist that an inflation cannot be sustained without an increase in the money supply or its close substitutes. Therefore, control of the money supply should be regarded as critical whether the causal nexus is the money supply or not. It may be that Weintraub's WCM theory would be more useful for describing certain periods of inflation than the equation of exchange or its derivatives. However, the theory by itself does not provide the necessary information for determining whether an inflation can be explained more adequately by one or the other theory. Of course, no "truisms" of this sort can accomplish this. Nor will the constancy of k and A make this WCM identity a better predictor of P than alternative sets of identities. If one knew the behavior of wages, with respect to output and employment and its composition, and of money and velocity with respect to employment one could predict prices with a variety of different accounting "truisms." For example, a *nonwage* cost mark-up theory could accomplish the same results.

In his first two essays Weintraub discusses what he refers to as classical Keynesianism and the inability of such a theory to say anything meaningful about inflation. Since this analysis is concerned with the determination of an equilibrium level of real output and contains an employment function only implicitly, it is not surprising that it is not well designed for the analysis of the price level. If Weintraub's criticism of the 45° Keynesianism is a pedagogical one of its efficacy as an expository device for explaining the price level, then I believe his argument is well taken. However, as a device for explaining the identity of income and expenditure to the novice and layman for whom this is still a mystery, the approach appears to me to be very useful.

Essays 3 through 9 contain Weintraub's attack on the equation of exchange, the presentation of the WCM identity and the latter's relationship to monetary and fiscal policy. There is some discussion of public policy as practiced by the monetary authorities and his own prescription for inflation control discussed above.

The tenth essay presents a rebuttal of various reviews of Weintraub's earlier work. Here, he finds some agreement between himself and reviewers such as Lerner, but where disagreement still exists, the argument is largely one of reiteration.

The final essay relates the WCM equation to the theory of growth and capital accumulation. While no new insights are provided in this formulation, I believe Weintraub's presentation significantly elucidates these basic ideas. This is perhaps the most useful essay in the book.

As a whole the book suffers from too much repetition. This may be the

inevitable result of the tendency of academicians to publish a single idea under many titles in various journals, which shows up when these titles are republished in a single volume. In spite of this, the collection contains many provocative ideas and analyses for graduate student seminars in economic theory.

PHILIP W. CARTWRIGHT

University of Washington, Seattle

Stabile Preise in wachsender Wirtschaft: Das Inflationsproblem. Erich Schneider zum 60. Geburtstag. Edited by GOTTFRIED BOMBACH. Tübingen: J.C.B. Mohr (Paul Siebeck), 1960. Pp. x, 274. DM 29.80.

This is a *Festschrift* for Erich Schneider, on the occasion of his 60th birthday. The editor, Gottfried Bombach, is to be commended for his choice of a central theme—"Stable Prices in a Growing Economy." The usual *Festschrift*, with contributions to several different fields of specialization, rarely commands the lasting interest of the profession, and some significant contributions remain hidden. In the present collection all essays but one deal with inflation, and students of inflation will probably return to the volume in later years.

The 17 contributions are by 18 contributors from 12 different countries; they are written in 3 different languages, 9 in English, 6 in German, 2 in French. Five of the essays deal chiefly with the monetary experience of particular countries; the other twelve are by and large theoretical analyses, even if they contain references to historical situations.

Léon Dupriez presents a lucid monetary history of Belgium since the end of the occupation in 1944. Beginning with the reduction by about one-half in the amount of currency in circulation, Belgian monetary policy has been based on the Ricardian principle that nothing is more important than keeping money scarce (p. 50).

Wilhelm Weber and Karl Socher describe Austria's battle against inflation since 1945; for the first six years the battle was not successful, but later, at least from 1954 to 1959, it was more successful than in most countries. A strategic instrument in the Austrian program has been a mixed commission on wages and prices, composed of cabinet officers and representatives of chambers, unions, and political parties, which may or may not "authorize" wage and price increases, but has no power to enforce its rulings (p. 70).

Jacques Rueff, in less than three pages, restates how, as a result of the termination of fiscal and monetary inflation, French producers were forced to pay more attention to increasing productivity. Exposed to competition and no longer able to sell at inflated prices, they must constantly strive to improve their techniques of production.

Börje Kragh, of Stockholm, writes about the inflation in Chile. What happened there was chiefly the old story of printing-press finance of budget deficits. In 1955, when the inflation was about to reach the galloping stage, restraints were applied and the rate of inflation was reduced. Kragh in his explanation of inflation makes much of "structural factors." He points to "autonomous changes in foreign trade" and to "certain structural rigidities,"

without offering proof that such factors were less important in Latin American countries that have done better in containing inflation. Structural factors, in my opinion, are largely reasons or excuses for lack of governmental backbone. If the explanations of those who point to "structural factors" in the economy as "causes" of inflation were correct, it would be impossible to explain how any inflation could ever be stopped. They are stopped by men with guts, not by changes in the "structure of the economy."

The guts—determination and ruthlessness—which Schacht applied in 1924 to the stabilization of the mark is severely criticized in Jørgen Pedersen's essay on the German monetary experience 1923 to 1930. Pedersen charges that the objective of the German policy, to stabilize the dollar value of the mark, was wrong: wage rates were allowed to increase about 95 per cent from 1924 to 1930, and this was "the fundamental flaw in the system" (p. 32). With stable wage rates, Germany would have avoided unemployment, would have eliminated its trade deficit, could have paid reparations. Probably so. But how should Schacht have succeeded in keeping wage rates from rising? Can Pedersen point to any democratically governed nation that has managed to stabilize money wage rates, either in the 1920's or in the 1950's? Strangely enough, Pedersen does not approve of the use of monetary restraints against wage inflation, for he chides Schacht for the "drastic credit restriction that forced firms to sell out their inventories" and for (in Pedersen's opinion) "abnormally high" interest rates of 7 to 8 per cent for long-term securities, "which must have been a severe handicap for residential building and construction in general" (p. 19). (Perhaps I should remind the reader that interest rates of 20 per cent and above for industrial credit were no exception in Central Europe after the stabilization of the currencies.) Pedersen concludes that wage controls would have "saved Germany from the collapse of its economic and political system and its fateful consequences" (p. 39).

Johan Åkerman presents "an institutional approach to the problem of inflation." By this he means an approach which includes answers to the question *whose* actions are "mostly responsible for the deterioration of the currency." Åkerman's answers are not in disagreement with what most economists have been saying: there are, before all, the governments, responding to expensive defense requirements and full-employment ideologies (p. 8); the "leaders of large industrial concerns," willing to grant higher wage rates and shifting the incidence by charging higher prices; and the labor unions, with "power . . . to enforce their demands" for ever-increasing wage rates. Like many of us, Åkerman would prefer a system of stable money-wage rates and gradually falling product prices.

Ugo Papi believes that the accent of most earlier discussions has been too much upon demand inflation and not enough on factors causing increased production costs and reduced supply. He points to excessive taxation, unproductive public expenditures, tariffs and other import barriers, and various restrictive government interventions, and he concludes that "cost inflation can come about even in the presence of unexceptionable monetary and credit policy" (p. 166). He fails, however, to make a distinction between policies that make for high costs and those that make for ever-increasing costs.

Gottfried Bombach, in his interesting essay, evaluates the comparative roles of demand-pull and cost-push in the inflations since the war. He deals with the former as "disturbance of equilibrium" and with the latter as "absence of equilibrium." At one point he questions the soundness of a "conscious retardation of the growth rate as a policy of preventing inflation" (p. 199). To refer to monetary and fiscal restraints (designed to avoid excess demand for goods and services) as conscious retardations of growth is, I believe, objectionable on two counts: first, it takes for granted that inflation promotes growth and, secondly, it insinuates that the anti-inflationists believe this contention. In actual fact they probably believe that inflation does not aid growth, or perhaps even that it more likely retards than accelerates growth in the long run. In the latter case anti-inflationary monetary measures would have to be regarded as conscious growth policy. Bombach may have had in mind the short-run effects which strict avoidance of inflation may have upon the rate of increase in the national product. Growth rates, I submit, should never be measured for periods less than eight or ten years.

My preceding comment applies also to Alvin Hansen, who in his piece on "Inflation and Growth" charges that a "basic reason" for the "slowing down in the rate of growth [in the United States] is the [exaggerated] fear of inflation" (p. 181) and that "the dogma of rigid price stability can become, indeed already has become in the United States, an obstacle to growth and progress" (p. 185). Yet Hansen agrees that "the all important thing is to prevent excessive investment booms" (p. 182). His point, apparently, is that "bulges of investment" should be prevented by taxes on investment, not by higher interest rates. In the United States "a low rate of interest is needed to open up investment outlets" (p. 183). Only "a country that suffers from capital shortage should have a high rate of interest" to attract foreign capital and to stimulate domestic saving. But this is not Hansen's advice to underdeveloped countries, because there, he argues, voluntary saving could not be sufficient. For these countries he prescribes inflation as the alternative to stagnation. "The question is rather what *degree* of inflation is optimum for development" (p. 184).

Roy Harrod agrees "that inflationary finance is able to jack up the level of investment for a *short period*," but he goes on to state: "The mistake made by some has been in supposing that a policy that achieves its purpose for a short period can do so if adopted as continuing measure of policy" (p. 178). "There is danger that inflation, like protection for 'infant industries,' might outlast the period for which it was expedient. Inflation may be as difficult to eradicate as protection, and if continued is more hurtful to growth" (p. 179).

Gottfried Haberler's study on cost-push and demand-pull inflation is known to American readers, and needs no additional advertisement. A point to stress is the difference he finds between the inflationary effects of administered wages and of administered prices. Monopoly power of business firms may explain why prices are high, but not why they should continually rise (pp. 92, 97).

Another study of the comparative role of business firms and labor unions in the inflationary spiral is presented by Carl Föhl. He explains that cost re-

ductions resulting from increased productivity would regularly lead to price reductions if wage rates remained unchanged. However, firms fail to reduce prices because they want to be prepared for the wage increases that never fail to come, and unions justify their demands for higher wage rates by the firms' failure to reduce prices (p. 154). (Föhl's writing style may fascinate readers who like suspense: when, if ever, is this sentence going to end? and will it beat the record established on p. 147 with a sentence of 75 words and some of the words having as many as 20 letters?)

Jan Tinbergen applies his well-known technique of choosing "policy parameters" and "other data" to a search for the best model for the explanation of inflation. He finds that in such a model the quantity of money does less well as a variable than the "short-term interest rate," which in turn is inferior to a "supply equation for short credits" (p. 118). He believes it to be a "paradox" that "the more elastic the supply of money is, the more will non-monetary factors determine the circulation of money" (p. 119). This says in effect: an increase in the quantity of money is *not* an important variable in the model, because if the money supply is so elastic that it can increase at the slightest provocation, only the provocations are important as explanations of inflation.

Heinz Haller inquires into the effectiveness of fiscal-policy measures to prevent inflation. He discusses the political possibility and economic effects of (1) budget surpluses, used either for debt repayments to foreign creditors or the central bank, or for holding inactive cash balances; (2) government borrowing, through voluntary or compulsory loans, with the proceeds held idle; (3) preferential tax treatment for voluntary private saving in blocked accounts; and (4) countercyclical surtaxes on individuals and corporations to reduce consumption and investment expenditures. Like most economists analyzing fiscal policy, Haller makes his task more difficult by not specifying the monetary policy with which the fiscal policy is associated. The simplest analytical procedure, in my opinion, would be to assign full responsibility for determining the quantity of money to "monetary policy," and to assume that fiscal policy can (by definition) not affect the quantity of money.

Alan Peacock investigates the "built-in flexibility" of a given tax system, that is, its effectiveness in offsetting changes in income flows through automatic changes in tax revenues. He shows that tax systems that would operate to offset cyclical fluctuations around a *stationary* average income would fail to offset fluctuations in a *growing* economy. (I am avoiding Peacock's terminology: he refers to his two cases as the "macro-static" and the "macro-dynamic" one.) The inference Peacock draws from his analysis is that recourse to "authoritarian" changes in tax rates is necessary if fiscal policy is to be relied upon to perform the task of stabilization (p. 218).

One of the liveliest essays is by Jürg Niehans on the effects of interest policy upon prices. Niehans believes that the layman's naive idea that higher interest rates make for higher prices deserves more consideration than scholars have been willing to give it. He proceeds to an analysis of the results of a reduction in the market rate of interest through open-market policy with a consequent increase in real investment. He finds it possible, under some con-

ditions, that in the end prices would be lower instead of higher. He admits that these are not the "normal" conditions and that the outcome may be highly improbable. Niehans ought to have proceeded to specify under exactly what circumstances the exceptional price reductions could occur and just how probable it is for such circumstances to prevail in reality.

The one essay that is not related to inflation is by Ragnar Frisch with the title "The Infra Effect on Investments." This is how Frisch defines it: "The effect produced by changing the input coefficients in the receiving sector K—i.e., in the row K in an input-output table—we will call the *infra effect* in K" (p. 105). The way Frisch explains the infra effect is unfortunately supra my powers of comprehension which, I admit, are in some respects underdeveloped. Yet, I wonder how many highly sophisticated readers can grasp what Frisch says in this piece. Perhaps he contributed it as a challenge to Schneider, the master of lucid exposition, to try his hand at interpreting the mysteries to a wider audience. Yet, it may be just on account of this "infra effect" that the Schneider *Festschrift* will be more often cited than most other volumes of this type.

The reviewer joins the contributors to this volume in paying homage to one of the most influential economists of Europe.

Fritz Machlup

Princeton University

On Economic Growth—An Essay in Pure Theory. By D. M. BENSUSAN-BUTT. New York: Oxford University Press, 1960. Pp. vi, 215. \$3.40.

"Perhaps," begins the second line of this little book, "a mathematical idiot with neither time nor wit to keep up with the spate of contemporary literature should not tackle dynamic economics: but, once glimpsed, the vision of economic history as a largely determinate process is so obsessive that one must get it out of one's system." The author is no idiot, mathematical or otherwise, and what came out of his obsession is a delightful essay, written with a blend of humor and wisdom, generous in scope and in the number and variety of problems touched upon, and yet so spare in the use of tools (not even calculus) and variables, and so simple in its presentation that it may appeal both to the mythical "intelligent layman" and to the teacher of economic history and development as an analytical introduction to his courses.

The story begins with a handicraft economy, without capital (or almost without), whose simple structure is guaranteed by nineteen assumptions (pp. 8-9). Of these, the most important are constant population, land, input coefficients, and state of technology; perfect competition and foresight; full mobility of labor and machinery (when the latter appears); and the immortality of machinery. The productivity of labor in all industries being identical, the annual wage equals productivity per man-year, which serves as the *numéraire*. There are neither profits nor rents, and no investment. The knowledge necessary for mechanization, that is for using a standard machine for each industry, does exist however, and the economy is jolted out of its stationary state by some exogenous accident, such as an unusually good harvest. The resulting savings, if any, are invested in the mechanization of the most suitable industry (yielding the highest rate of profit). Thus profits appear and

are, fully or partially, reinvested until this industry is completely mechanized. The prices of its products now fall because of lower costs, bringing down with them the rate of profit and so allowing the mechanization of the next most suitable industry. In the meantime, real incomes rise, and the interaction of income and price elasticities with the falling rate of profit opens up new investment outlets. The process goes on until all industries capable of mechanization are fully mechanized, or until the falling rate of profit, possibly combined with the increasing wealth of the capitalists, eliminates further saving. But in any case, the engineering industry (producing machinery) is not capable of mechanization. Machinery is produced with labor only.

This process of the initial departure from, and the eventual return to, the stationary state (which can take decades or centuries) is described with skill and insight. No admirer of the concept of stationary state, I had to admit, first grudgingly but with increasing admiration, that quite a few of the author's observations are applicable, not to the history of Europe and North America, but to many underdeveloped countries. At some stage of their history they must have had both capital accumulation and a modicum of technical progress. Yet all this evidently came to a halt, at least until recent times. Perhaps the marginal productivity of capital *with their old technique* had become very low indeed, while, as the author observes, the phenomenon of underemployment can be explained by the preference for leisure over the minute increment in income that an extra unit of effort could yield.

In the subsequent chapters many of the initial restrictive assumptions are removed or modified. Several techniques now become available for each industry. On the whole, the model shows remarkable stamina in its encounter with reality, and all goes reasonably well until Chapter 5 where (1) machinery loses its immortality, and (2) the engineering industry becomes capable of mechanization. As a result, the concept of the capital stock acquires its painfully familiar ambiguity, dragging down with it those of profit, income and input-output relationships. The mere appearance of depreciation is no great obstacle, and it yields, I think, to the author's "blunt instrument of common sense" (p. 75), though for unforeseen obsolescence common sense is a bit too blunt. But greater complications arise when machinery is produced with the help of other machinery and with changing technique. This problem requires some form of sequential analysis (difference equations, for instance) which the author refuses to use. So having battled it with courage and perseverance, and having duly impressed on the reader its inherent nastiness, he quietly puts it away for the rest of the book.

In the light of his objectives, he is not to blame. Yet I cannot help thinking that the use of capital and the presence of technical progress in the production of capital goods are among the most important aspects of economic development. They contain a partial explanation of such interesting phenomena as the slight, if any, secular fall in the rate of profit, the character of trade between developed and undeveloped countries, the rationale of Soviet economic policy, and many others, not to mention their significance to capital theory as such. It is a pity that the problem cannot be handled with simple tools.

The second important modification of the original assumptions consists in

the introduction of population growth with limited land. Ricardian economics (which we all study before, but seldom after, our general examinations) now comes to life, and it is striking how the limitation of land can change the results previously obtained ("Second Model" in Chapter 11). To mention only the most significant changes, the emergence of rent can provide an endogenous development force (as distinguished from an exogenous shock, like a bumper harvest, used previously) by creating a surplus a part of which may be saved and invested. But later in the game, the rising rents can depress both wages and profits (in true Ricardian tradition), while the ever-rising value of land allows landlords to dissave by selling part of it to savers without suffering any loss in wealth. Thus savings are dissipated, and even a potentially respectable propensity to save of the rest of the population may yield little or no investment (all this depending of course on the relative magnitudes of the variables involved). Technical progress in agriculture and in the production of agricultural machinery and other inputs has long since removed this danger from the face of advanced economies; but what about our less developed brethren? Perhaps heavy taxation of rent (or more correctly, of "pure" rent, if it can be identified), if not an outright nationalization of land, is not inappropriate at the beginning of economic development (a cheer here for Henry George!), though the whole question loses its importance in the more advanced stages.

The last six chapters (12-17) contain notes on models, on technical progress and cultural change, on uncertainty, on money, on the state, and finally on welfare, and show once more the author's rare ability to build beautiful structures from simple blocks. But may I be forgiven for taking issue with his statement: "Name a society whose economic advance delights its statisticians and you name one in which the good qualities of its earlier life are decaying and in which no new civilization has emerged" (p. 213). Just how good these "good qualities" were may stand some examination; perhaps their "goodness" is directly proportional to the square of their distance from the observer. And what about societies whose economic advance is the despair of their statisticians?

EVSEY D. DOMAR

Massachusetts Institute of Technology

A Study in the Theory of Investment. By TRYGVE HAAVELMO. Chicago: University of Chicago Press, 1960. Pp. vii, 221. \$5.00.

We know very little about what determines the level of investment spending. Existing theories of capital provide much metaphysics but few hypotheses that can be tested by econometric methods. Professor Haavelmo's study clearly demonstrates the emptiness of contemporary investment theories, whether they draw upon the time preference notion or the Keynesian investment schedule concept. If this phase of Haavelmo's effort—however negative it may be—does anything to expose and explode prevailing orthodoxy, it will have made a badly needed contribution.

The positive contribution of the study is not clear and can be only revealed by whatever success econometricians have in testing the mathematical models.

The work consists of three major parts. First, Haavelmo attempts to conceptualize capital as a "factor of production." Next, he examines the problems of capital accumulation in a centrally-controlled economy. Finally, he treats the behavior of a "market economy."

The reason for viewing capital as a factor of production—despite the forceful arguments of such diverse capital theorists as Hayek, Frank Knight, and Joan Robinson that it is not—rests on the appealing view that the services of capital agencies are inputs in the production-function sense. Since the production function defines technological constraints that influence producers' behavior, a theory of investment demand should commence from behavior propositions about those who make production decisions. (It might also be added—as Mrs. Robinson has shown—that the production function concept breaks down because of the difficulty of handling the capital problem.) Fully aware of the difficulties, Haavelmo proceeds to "disaggregate" capital and essentially talk of physical agencies which do in fact have a "productivity." However, we run into a durability problem. Decision makers, through both the initial construction of a capital agent and the resources they may divert to current maintenance, can affect the amount of productive power invested in it. And this is what the problem of investment theory is all about. Yet from the viewpoint of the decision-maker who faces the constraint of the production function, the services of the \$40,000 bulldozer may be a perfect substitute for the services of the \$80,000 one. The only way to cope with this problem is to incorporate indexes of durability (which Haavelmo admits are not easy to come by) in models that employ production functions embracing one or more subgroups of homogeneous capital "factors."

The mathematical models in the sections that treat investment behavior in planned and "market" economies illustrate the serious conceptual and measurement problems that would arise in attempts to test empirically models which employ the factor-of-production concept of capital. Haavelmo explicitly points out many of these difficulties. His effort should put over-zealous econometricians on guard.

With regard to behavioral insights, Haavelmo makes two worth-while but negative points. First, the idea of an optimal rate of growth—which in some theoretical systems implies an optimal "social" rate of time preference—falls to the ground. In a centrally controlled economy planners must make a policy decision regarding the level of output at some future date. Such a decision requires making interpersonal comparisons, and preforce must be a *political* one. The decision is one of present consumption versus future productive capacity, to be used for whatever purpose policy makers choose. (In some settings, future capacity might be used to launch 100 megaton warheads or to support gigantic foreign aid programs—consumption is not the sole end of economic activity.) There is no such thing as an optimal rate of growth. There is only an optimal way of attaining a given output objective.

Second, that which is "demanded" when we view capital as a factor of production is instrumental services. The flow of investment spending represents a demand for agencies that constitute a small increment to the total stock of agencies that render productive services. From a recognition of these points,

Haavelmo shows that the demand for investment cannot be derived from the "demand for capital" and that "demand for a finite addition to the stock of capital can lead to *any rate* of investment, from almost zero to infinity, depending on the additional hypothesis we introduce regarding the speed of reaction of capital users" (p. 216, italics in the original).

What, then, are the determinants of the level of investment spending? We simply do not know. In an enterprise system, individuals and groups do demand new physical assets, in the same sense that they demand ice cream, beer, and ballet performances. What is crucial for the behavior of the economy is *how much* they spend on new assets. Questions about how much people spend on consumer items are questions about demand elasticity, a subject about which we can say nothing a priori and which is a matter of "taste." We can homogenize diverse capital agencies and say that what investors buy are future dollars. A high rate of return, or interest rate, indicates that the price of future dollars is low, and vice versa. People will buy more future dollars at a low price than at a high price. At this point we can recognize—contrary to Haavelmo's view—that the theory of investment is just as "advanced" as the theory of consumer choice. But whether people spend more or less on future dollars when their price rises or falls is a question of demand elasticity. It is a question of "taste." The classical time-preference theory of investment spending, or the contemporary Keynesian theory, are at best assertions about people's tastes. Economists know better than to make such assertions about consumer behavior. The sooner we relegate similar assertions about investor behavior to the pile of theoretical deadwood, the sooner we may begin fruitful research about decisions to construct, acquire, and accumulate capital agencies.

J. A. STOCKFISCH

University of California, Los Angeles

Growth and Stability of the Postwar Economy. By BERT G. HICKMAN. Washington, D.C.: The Brookings Institution, 1960. Pp. xviii, 426. \$6.00.

The U.S. economy escaped an early postwar depression, and the downswings in 1948-49 and 1953-54 were to a large extent ascribed to extraordinary autonomous forces. Political and economic developments throughout the world in the first postwar decade directed the attention of economists to problems of economic growth. The 1957-58 recession was more "normal" and more international, and this and the next recession brought business cycles back to focus. In spite of its title Hickman's book concentrates on the latter topic. The relation to growth of changes in such factors as technology, the structure of industry, or the degree and pattern of market imperfection is discussed only very briefly, mainly as part of the "profile of the postwar economy." Part I of the book deals with the concept and significance of economic stability and compares American cycles in the postwar and prewar period. Part II describes in detail the U.S. cycles between 1946 and 1958. Part III discusses the role of key factors in the postwar cycles, viz., federal spending, consumption, investment, residential construction, monetary policy and price movements.

Hickman emphasizes the role played by changes in federal expenditure and

business inventories, and he draws attention repeatedly to autonomous variations of consumer demand. He stresses, and accounts for, the movement of residential construction "against the cyclical tide during many of the postwar years," and he notes the stabilizing influence of induced changes in corporate income tax receipts. However, he cautions against uncritical acceptance of the view that structural changes of the economy have permanently altered the character of U.S. cycles. Consideration of the international implications of U.S. cycles, and of the changes from cycle to cycle (particularly between interwar and postwar cycles), would have interested American and foreign readers. Moreover, from the methodological point of view some intercountry comparison of cyclical experience and countercyclical policies might have proved eminently helpful. Hickman's study is confined almost exclusively to a comparison of U.S. cycles.

In discussing changes in the personal and national saving-income ratios Hickman has not looked into the influence of the rate of change in income, and he refers to *the* marginal propensity to consume (p. 110) and *the* average propensity to save (p. 327). Different rates of change in income are accompanied by different responses of the income-earner. The higher the *rate* of growth in personal disposable income, the greater tends to be, at a given income, the saving-income ratio. Hence, the greater the rate of growth of total income and the more the increments are concentrated in few hands (thus involving high rates of growth of individual incomes), the greater tends to be the over-all saving-income ratio. The saving experience of several countries, among them of Japan in the last decade, reflects this relationship. Several variations in the U.S. average or marginal personal saving-income ratio noted by Hickman (e.g. pp. 54, 69, 128, 134, 264, 266, 222-23, 226) might, in part, reflect the same relationship. On similar grounds, the effect on the over-all saving-income ratio of short-term variations in income distribution (e.g., pp. 149-50) depends considerably on the distribution of the income changes: generally, if few incomes decline heavily while many increase slightly, the over-all saving-income ratio is likely to fall. The significance of the rate of change in income, and in other variables, has been neglected also in another context, namely, in the unqualified statement that "growth . . . is a basic criterion of satisfactory economic performance" (p. 11).

Since Hickman's study ends in 1958, he could reasonably ignore questions of structural unemployment or of an alleged chronic weakness of the U.S. economy. Economists have been concerned about certain features of the 1954-58 cycle, about the short duration and incompleteness of the 1958-60 expansion, about the fact that since 1956 full employment has been reached only fleetingly, and about the lower rate of growth in the United States than in several other important countries. These observations have raised further questions: about the manner in which public policies relating to cycles are affecting the rate and pattern of growth of the U.S. economy. The nature and relative success of fiscal and monetary policies can be perceived only against a clear background of the goals pursued. Even if the relation of public policies to growth was not a burning issue in most of the period studied by Hickman, full employment and price stability were not clear-cut alternatives. Hickman

might have examined more fully the variations in emphasis placed by the Federal Reserve System on these two goals, the reasons accounting for these variations, and the criteria by which the Federal Reserve or other authorities have chosen, or are likely to choose, the desirable combination of rates and patterns of unemployment and instability of prices—and of rates and patterns of growth. These are matters of increasing concern among economists, and, in this case too, intercountry comparisons might be more helpful than comparisons with relatively remote U.S. cycles.

Hickman has patiently marshaled a wide range of facts. More important, he has presented them skillfully: through the detailed description the reader can follow easily the main line of the argument and observe the important features. Economists concerned with cycles or current economic problems will enjoy Hickman's perceptive and stimulating analysis. Moreover, his able blend of theory and factual analysis provides valuable reading, amply documented, for courses in business cycles or income and employment.

S. G. TRIANTIS

University of Toronto

Ansatzpunkte der Wohlstandsökonomik. Versuch einer Neuorientierung im Bereich der normativen Lehre vom wirtschaftlichen Wohlstand. By REIMUT JOCHIMSEN. Veröffentlichungen der List Gesellschaft Vol. 21. Basel and Tübingen: Kyklos Verlag and J. C. B. Mohr (Paul Siebeck), 1961. Pp. xi and 115. DM 15.00.

The title of this book may be roughly translated as *The Foundations of Welfare Economics*. The author considers *Wohlstand* as the proper equivalent of the English "welfare." He discusses reasons why *Wohlfahrt* should not be used although *Wohlstand* in the past has also been used as the equivalent of "wealth." The subtitle states that this is an inquiry into the problem of re-orienting the field of normative economics. What Viner said forty years ago is still appropriate, namely that the scrupulous concern of economists not to encroach on ethics is only stressed in theoretical discussions but, fortunately for the value of their work, not greatly in evidence in actual research or teaching (*American Economic Review*, 1912, reprinted in *The Long View and The Short*, Glencoe, Ill., 1958, p. 8). However, recognition of the special nature of value judgments and care in their use is indispensable, and thus a methodological discussion in this field has significance.

The first part of the book is a good, rather concise survey of modern welfare economics with some emphasis upon its development. It is somewhat comparable to such surveys as De Graaff's *Theoretical Welfare Economics*, Cambridge, Eng. (1957), though the arrangement is different and additional literature is drawn upon. We are led from the ideas of the classicals, for whom welfare is tantamount to wealth, to the marginalists, who attempted the aggregation of utility; by them utility is first taken in a psychological sense but finally in the purely formal Paretian sense of preference. The development from Pigou to the present is a continuous backing and filling, trying to make assumptions more restricted, straightening out logical confusion, and in this process raising more and more doubts, with regard to such issues as inter-

personal comparisons, the compensation principle, the consistency of majority decisions, etc. The only consistent foundation of welfare economics according to the author is found by making all normative assumptions explicit. This is done through resorting to a welfare function. This function may be written in the customary way or expressed in the form of a map of social indifference curves, provided that we make clear that this map is not the result of simple "addition" of individual maps. The difficulties, though, only begin at this point because all substantial problems are now moved into the function which remains conveniently all-embracing and not well defined.

The most urgent task, according to the author, is to attain the necessary normative premises (*Wertprämissen*). It is here in the second part of the book that the author tries to break new ground—though he gives only *Ansatzpunkte*, not neat solutions. In a discussion of this kind, somewhat neglected in most Anglo-American literature, I find the main value of the book for the U.S. reader and its main originality. At least four areas are to be determined: the degree of personal liberty, social minima for the individual, societal (democratic) order, minimum adaptability of the economy to exogenous and endogenous change (p. 97).

The substantial content of the welfare function should, according to the author, be developed through interdisciplinary cooperation, to include, as expressly stated, that of philosophers and theologians. However, the author has only modest hopes. Most economists are not impressed by the widely advertised interdisciplinary approaches of the past. The author is concerned with the built-in biases of the "professionals" in the various pertinent branches of knowledge, but he hopes that they will neutralize each other. The admission of philosophers and theologians into the charmed circle will provide some antidote against overly "scientific" biases. Thus, though collaboration is not the automatic solution, it is an operational base from which we may hope to achieve something more than ever more formal generalizations. This method might be more fruitful than *ad hoc* philosophizing. A public purpose, national goals (and that is what the welfare function is about) are much talked about and such a method toward finding out about them might well be attempted with the collaboration of the professional economists.

The book contains an extensive listing of literature, overwhelmingly Anglo-American. This seems to confirm the widely held opinion that most technical work in this field is written in English.

WALTER FROELICH

Marquette University

Growth and Prosperity Without Inflation. By JOHN PHILIP WERNETTE. New York: The Ronald Press, 1961. Pp. v, 143. \$3.75.

The purpose of this small volume is to illuminate the nature of the obstacles impeding attainment of the familiar triad of macroeconomic goals—high prosperity, rapid growth, and stability of the price level. This subject, of course, has been the focus of six years of intensive research sponsored by the Joint Economic Committee. The voluminous material amassed by this Committee conveys few helpful consensuses; rather it reflects a wide range of pro-

professional opinion and an appreciable bewilderment. Nevertheless, on the basis of the committee's studies the reader of the book under review could rightly expect a high degree of sophistication in the treatment of macroeconomic policy issues. From this perspective, the performance is disappointing. Wernette does raise some of the crucial questions of stabilization and growth policy, but more often than not he simply avoids trying to answer them. Where answers are supplied, they are guarded or merely superficial.

At the level of the theoretical basis for policy, for example, Wernette glosses over the very real arguments and doubts concerning the compatibility of the several macroeconomic goals. Thus, he baldly asserts without supporting evidence that there are several patterns among changes in money wage rates, real wage rates, and the price level "that not only avoid inflation and depression but also are compatible with growth and stability" (p. 49). Further, as Wernette suggests, it may be helpful to appreciate that *if* price level stability is inconsistent with prosperity and rapid growth, the inconsistency "stems from human behavior, not from some absolute economic law . . ." (p. 131). But it is harmful to imply that the goals can be made compatible by readily apparent government policies and by structural changes of modest proportions. Or again, in view of the profession's inability to reach agreement on the causes of inflation Wernette reasonably confronts the reader with the whole spectrum of causes. But, once more without sufficient substantiation, he singles out inordinate wage demands for special condemnation.

In his exposition of growth and stabilization policy Wernette concentrates on customary, noncontroversial issues. To the extent that nuances are discussed, the subtleties are limited primarily to the difficulties of timing monetary and fiscal policy. The prevailing doctrine that different policy-mixes are appropriate to different cyclical and longer-term situations is scarcely evident. Wernette offers only two specific countercyclical prescriptions for alternative consideration. The entire personal income tax rate structure should be made flexible, presumably through administrative discretion or a tie-in formula. More unusual, in a slump the government should undertake "payments to taxpayers proportional to their income tax payments in the preceding year" (p. 100). Except for very general formulations, growth and anti-inflation policies are largely ignored.

This volume was obviously designed to acquaint the general public, not economists, with the hazards of macroeconomic policy prescription. This undertaking sorely needs doing. Unfortunately, the book's apparent premises—that the public is unable to follow nontechnical, analytical reasoning and cannot comprehend the complexities involved in formulating an effective policy for stabilization and growth—utterly frustrate the fulfillment of this task. A scholar writing for the general public has a deep obligation to protect it from its essential defenselessness. Wernette fails to do this. Indeed, in oversimplifying, in posing critical questions and leaving them unanswered, and in drawing inferences where none can yet be reasonably justified, Wernette does disservice to his own commendable purpose.

M. O. CLEMENT

Dartmouth College

Intermediate Economic Analysis. By W. HARRISON CARTER and WILLIAM P. SNAVELY. New York: McGraw-Hill Book Co., 1961. Pp. viii, 424. \$6.95.

The authors of this text have accomplished their objective. They set out to do an orthodox text in economic theory, and they have done just that. "Orthodox," in this context, refers to the corpus of neoclassical microtheory as it was generally accepted about 25 years ago, and as it pertains approximately to the world that existed about 50 years ago.

Judged as an example of its genre, this is a good book; and instructors wishing to teach an orthodox, traditional course in economic theory would be well advised to give it their serious consideration. It has in large measure the major virtues of a text: the exposition is clear and thorough; there is a good balance between text material, arithmetic examples, and geometric charts; the various topics are well interrelated to one another; and there is an effective alternation of discussions of formal theory and of its relevance to some real economic problems. My quarrels with the treatment of the material covered are minor; the book includes, for example, the customary tedious discussion of elasticity, inadequately justified by the extent of the subsequent use of the concept.

The topics and their organization follow the usual pattern. The book begins with a major section on price determination under various market structures, followed by another group of chapters dealing with distribution and factor-price analysis. Two brief chapters on national income analysis conclude the treatment.

The real question at issue, in the reviewer's mind, is whether or not the market really needs yet another rendition of the orthodox approach, even a good one. It would seem that the time and energy of the authors and the resources of the publishers might have been better spent to introduce some product differentiation into the market, and to widen the choice available to the public, by offering something that does not already exist in abundance. For example, there is certainly a dearth of clear, well-written texts setting forth the somewhat more contemporary analysis of the somewhat more contemporary world. The demonstrated talents of the authors are such that they might well have made a noteworthy contribution in this connection, if they had only tried.

As it is, Carter and Snavely on several occasions march right up to the very brink of modernity, only to retreat again to the comfortable clichés of the traditional approach. Two examples will suffice. First, the authors frequently and commendably stress the uncertainty facing the firm in the marketplace. This point would seem to be a very good lead into a discussion of the basic theory of profit-maximization under conditions of uncertainty. Certainly that theory has developed and stabilized to the extent that it merits some elementary treatment in intermediate texts. But nothing of the sort was even attempted by the authors. Second, the chapter on oligopoly and oligopsony (which is otherwise very well done) frequently stresses the interdependence of the firms. The stage was therefore set and ready for a presentation of the basic concepts of game theory; but again, nothing happened.

A final point concerns the realism of textbook theory in the context of today's world. Certainly, one of the central facts of life today is the dedication

(spurred on by competition) of enormous resources to research, to development, to invention, to innovation, and to market development. In consequence, we are experiencing a remarkable and progressive reorientation of our entire way of life both as consumers and producers. True, this wheat comes with a lot of chaff; but it can hardly be doubted that the predominant tendency is in the direction of progress and improvement. New products and new technology, and their propagation in the marketplace, play a key role in the dynamics of competition. Yet, the present authors (in common with most textbook writers in economic theory) tend to regard innovation as little more than a sneaky method employed by some industries to avoid price competition. True, product improvement may well detract from the role of price as an instrument of competition, and may even result in higher prices; but surely some of the other consequences of this process deserve a more prominent place in the discussion.

SIDNEY SCHOEFFLER

University of Massachusetts

Intermediate Income and Growth Theory. By MELVIN L. GREENHUT and FRANK H. JACKSON. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. viii, 376. \$6.25.

This new addition to the list of textbooks in macroeconomic theory comes at a time when the competition is bound to make great demands on the would-be prize winners. Greenhut and Jackson make their play for a rather specialized part of the market by concentrating attention on national income analysis and avoiding any exposition of monetary theory or money and banking. This might well appeal to those whose students will take, or have taken, another course in monetary economics. It is not a simple matter, however, to leave out all those questions in connection with which money has an active role.

Similarly the authors hold their treatment of the business cycle to a minimum. In the one chapter devoted to business cycle theory, Greenhut and Jackson offer a rather personalized version of Schumpeter, Hayek, and Foster and Catchings. They end up with a Samuelson accelerator-multiplier interaction model sparked by Schumpeterian innovations. More might have been said to relate the rhythm of the cycle to the shifting conditions affecting the innovator, which would, I think, have strengthened their view of the cycle.

One feature which marks this text as unusual is the order in which national income theory and national income accounts are placed. The two chapters on accounting appear as numbers 10 and 11 (out of 16 chapters), between the chapter on the government budget and the one on the business cycle. The reason given for this order is "that an understanding of why the accounts take the form they do requires a prior understanding of what they are designed to show."

If the book were a rigorous presentation of economic theory in which a deductive system was built from postulates and the derived theorems were subjected to empirical test, it would then be proper to put things in this order. But this is not what Greenhut and Jackson try to do. When the accounts are

finally introduced in a formal way they are in some respects an anticlimax, for the student has already had to learn most of the static relations before coming to those chapters. While I am complaining about the order of the accounts I might add that I wish the opportunity to display the structure of static relations had been more fully grasped. For example, reference could have been made back to Chapter 3 to show that the accounting identities correspond to the definitional identities obtained earlier.

The authors make a considerable point of their desire to aim the text at undergraduates with little background in economics. In the early sections of the book they seem to have been most conscious of their intention and here they run the risk of achieving simplicity at the expense of failing to take up important but difficult topics. For example in their discussion of the consumption function they give little space to the reporting of the statistical evidence. Thus they ease their task of explaining the diverse record which is not consistent with any simple view of the consumption function.

Perhaps it is the attempt to simplify which has led to some errors of substance. In the exposition of the multiplier, for example, the uninteresting one-shot expenditure multiplier is worked out. The increases in income over the time periods in one year are then summed to obtain an irrelevant cumulative total. When a few pages further on a more conventional multiplier is set out, it is unclear what the relation between the two is.

Furthermore, as a consequence of oversimplifying the early chapters there is inadequate equipment for the tasks taken up in later chapters. The section on growth, for instance, suffers from the lack of a long-run consumption function and a Hicksian cycle model capable of tolerating high accelerator values. The growth sections suffer in other respects as well. A brief statement is made, for instance, about the inconsistency of the warranted rate of growth and the growth of the labor force resulting in chronic unemployment. This theoretical possibility is mistakenly intended as a description of modern capitalist countries such as the United States in which a potentially high rate of capital accumulation can assure full employment, even labor shortage.

A number of troublesome omissions in early chapters also weaken the growth sections, such as the lack of attention to the effect of capital stock on investment, liquid assets on consumption and investment, the distinction between marginal productivity of capital and the marginal efficiency of capital, and then later between these and the incremental capital-output ratio. The distinction between income movements when there is unused capacity among factors generally and when the economy is up against the full employment barrier is never made clearly. This last omission is particularly disturbing, for it is responsible for at least some of the confusion about inflation. However, not all of the trouble with the passages on inflation can be laid here. It would be better to have had an explicit theory of inflation which depends on either demand, cost, or structural shifts. Perhaps this is a result of the arbitrary division of the subject in the authors' minds which they may believe, relieved them of this responsibility. But when it is inconvenient to avoid the subject, the results are awkward. Thus they conclude about the recent price-employment record, "the parallel condition of unemployment on

the one hand and inflation and rising GNI on the other was the result of capital goods over-expansion compared to savings, which was in turn, tied up with industrial bottlenecks and business miscalculations" (p. 328). But I am fairly sure it can be counted on that students are less critical than reviewers.

R. S. WECKSTEIN

Williams College

National Income: Statistics and Dynamics. By JOHN S. HENDERSON. New York: Harper & Brothers, 1961. Pp. vii, 439. \$6.50.

This is a text for undergraduate courses in aggregative economic analysis. Measurement of the national income and the determination of its level are combined with problems of growth and fluctuation within a unified framework of analysis. It is the third text of similar type to appear within the past year and may well prove, in many teaching situations, to be the best of the three, especially since the author never assumes that students will bring with them any significant carryover from other courses they may have had.¹ In fact, so far as the static analysis is concerned, Henderson suggests that the text is suitable for use by students who have had no other course in economics than a reasonably strong one in principles. I agree with the author. The best students may find the first few chapters too simple, but they will certainly meet the needs of the average student. There is more than ample material, rigorously presented, to whet the appetite of all students as the text develops.

Part I, made up of eight chapters, is devoted to a lucid, step-by-step development of the basic Keynesian static national income analysis. Keynes' fundamental framework is combined with Hicks' diagrammatic summary, with Wicksell's interest rate concepts neatly fitted into the framework. The section concludes with two fine chapters on monetary and fiscal policy; these are skillfully handled, and should contribute considerably to student understanding of the basic importance of theory.

Part II consists of seven chapters examining the dynamics of national income analysis. This portion naturally assumes a grounding in static theory of the type covered in Part I. Here the author draws upon Samuelson's model of the interaction of the accelerator and the multiplier, the Harrod-Domar growth model, and discusses the cost-push and demand-pull concepts of inflation. The latter two ideas, and others, make up the final chapter which serves as an illustration of the dynamic aspects of policy-making. The whole text will serve as a solid foundation for additional assigned readings in the journal literature.

Mathematics must inevitably be employed in any theory text today; Henderson has wisely kept it within the bounds of the college algebra with which

¹ The other two works which have come to the reviewer's attention are: T. F. Dernburg and D. M. McDougall, *Macro-Economics*, New York 1960, and Gardner Ackley, *Macroeconomic Theory*, New York 1961. The latter appears most suited for first-year graduate students and quite advanced undergraduates who have elected the course; the former text covers much of the same ground as Henderson's volume, but not, in the reviewer's opinion, with the same clarity, simplicity, and thoroughness.

all students are supposed to be equipped. In addition, graphs, which are extensively employed, are developed early in the book and their style is consistent throughout, so that the technique, once understood by students, need not be retaught.

While Henderson suggests that the two parts of the text may be used independently, the first part for a course in national income, and the second for a course in cycle theory, it would be my inclination to utilize the entire book as the basic text in a one-semester course in macroeconomics, either preceded by or followed by a one-semester course in price theory. The year's work would then serve as a basis for more advanced work in theory. But however the curriculum be organized, this text deserves widespread consideration; it is written to the level of student understanding; it is economical in its use of resources; above all, it provides the essential tools for macroeconomic analysis of a significant sort.

VICTOR C. HECK

Mercer University

Introduction to Macroeconomic Theory. By GERALD SIRKIN. Homewood, Ill.: Richard D. Irwin, 1961. Pp. xii, 252. \$6.50.

Income theory has been well served with good elementary texts. Sirkin adds to this abundance by offering a concentrated version that still covers most of the important topics. His brevity causes a few difficulties, but his treatment of the subject serves as a stimulating introduction to this field of study.

The author has divided his book into three parts: Fundamentals; The Determination of Aggregate Demand; and Problems and Policies. Since this text is designed for students who may not have had any prior training in economics, Sirkin introduces with great care the basic ideas and limitations of the national income accounts. He has, however, neglected any mention of the money-flow accounts or the materials used in aggregative input-output analysis. Because of these omissions the book fails to offer students a fully-developed view of the data currently available for comprehensive macroeconomic analysis.

The third chapter, "An Economic Skeleton," leads the reader rapidly into simple aggregative models, equilibrium, consumption and savings functions, and a variety of simple to fairly complex multipliers. Since this is all presented in 24 pages, the instructor is compelled to supply firm guidance to keep students on the track. An unusually fine set of graphs, however, provides admirable assistance for this task.

Three of Sirkin's first chapters on the determination of aggregate demand are highly-polished examples of exposition. His discussions of "Personal Consumption," "Private Domestic Investment," and "Money and Aggregate Demand" highlight the most significant aspects that should be understood by undergraduates. Unfortunately, the other two chapters in that section fall well below the level of the others. In analyzing "Public Demand" the author breezes over the contribution of government expenditures to the national product with only a most perfunctory analysis. This is surprising in view of the excellent job that is done on consumption and private investment. Again, in

the chapter on "The Skeleton Reassembled," the vital task of summarizing the interactions of all sectors is superficially performed with only brief notes on static and dynamic models.

Government expenditures and policies again receive only passing comments in the theoretical sections of the chapter on "Income Fluctuations." Sirkin clings primarily to his simple two-sector model. He does, however, inject somewhat more detail on the role of government later in this chapter in his well-documented review of fluctuations between 1929 and 1959.

"Inflation" and "Growth in a Developed Economy" are both presented in a highly creditable manner for this elementary level. The author distinguishes among several varieties of inflations and ties his discussion of these closely to his earlier analysis. He sets up the basic growth model with well-defined variables and provides a short example which complements his model very satisfactorily.

In the final two chapters, Sirkin takes up "International Aspects of Income Analysis" and "Macroeconomic Policies." The former concentrates on factors related to the balance-of-payments equilibrium, including the influence of growth and inflation. The policy chapter enlarges on these problems by taking into account the conflicts and associations among various possible economic objectives. The familiar quartet of stability, growth, inflation, and balance-of-payments equilibrium all appear. Fiscal and monetary tools for carrying out policy objectives receive attention, even though the analysis seldom probes very deeply.

Taken as a whole, and considering its target as an elementary text for income theory, this book deserves serious consideration. Many sections are written extremely well. It is up-to-date and contains valuable references that may be used for more intensive study assignments. Its condensed treatment of the subject has a great advantage over alternative texts that tend to overwhelm students with too much detail. While there are a few serious gaps, these may be filled readily by alert instructors.

DAVID A. BAERNCOFF

University of Oregon

Economic History; Economic Development; National Economies
American Economic History. Edited by SEYMOUR E. HARRIS. New York:
McGraw-Hill Book Company, 1961. Pp. ix, 560. \$7.95.

This is an anthology of fifteen articles written specifically for the volume by twenty experts and edited by Seymour Harris. According to Harris' prefatory remarks, the contributors were chosen "on the basis of their command of their fields and their general competence in economics," and they form a distinguished list, indeed. Moreover, "no attempt was made to select authors of any one school"; the diversity of point of view is marked. This combination of expertise and diversity of viewpoint is excellent from the point of view of the reader, but presents difficulties for the reviewer due to the variations in style, coverage, approach, emphasis, etc. In a sense, the title of the work is misleading since it connotes a balanced, integrated treatment of all phases of

American economic history, i.e., a text. A more descriptive title for the volume might have been "Selected Studies in American Economic Development" since it is a collection of articles dealing with particular aspects of the subject but does not provide coverage of all areas adequate to meet the needs of most students. The word "development" is suggested since major emphasis in most of the articles is on economic growth and the emergence of modern institutions.

There are four major sections: Part I, "Some Major Issues," is introduced by a provocative discussion by Arthur Schlesinger, Jr., primarily concerned with a review of thinking regarding the role of government in economic life. Alfred H. Conrad is concerned with income, growth and structural change, and attempts to "explain the growth of national income in the nineteenth century by applying a simple capital adjustment theory of growth to the three spurts of growth that marked the period." Peter B. Kenen explores the problems encountered in the construction of some of the statistical series useful in determining American economic development and the trends that the series reveal.

Part II considers broad issues of policy. After an introduction by Harris, J. G. Gurley and E. S. Shaw consider "Money," concluding that "American monetary history can be interpreted in terms of a race between growth in supply of money and in demand for money in economic units' portfolios"—with reference to the role of financial intermediaries, of course. Harris then discusses fiscal policy, stressing particularly the changed attitude toward the place of government spending in the economy. A review of economic fluctuations by Asher Achinstein focuses on major and minor cycles, long waves, intermediate and construction cycles in American experience. This is followed by a discussion by Douglass C. North on the United States in the international economy over the period 1790 to 1950, which is particularly useful in analyzing the impact of international trade and the balance of payments upon U.S. development. G. A. Lincoln, W. Y. Smith, and J. B. Durst contribute a chapter on the history of mobilization and war economics from the Revolution to the present.

Part III, "Determinants of Income," begins with an analysis of the significance for economic growth of population increase and changes in age structure. This is of particular interest in the light of expectations regarding population growth and mix in the current decade. This is followed in logical sequence by "The Pattern of Employment Since 1800" by Stanley Lebergott, which examines changes in the distribution of the labor force, causes and consequences. Policies regarding land, water, energy and minerals are reviewed by Joseph L. Fisher and Donald J. Patton in "Natural Resource Policies in American Economic Development." Merton J. Peck discusses transportation in terms of two major issues: its role in American development and the effectiveness of government regulation. This is followed by two chapters by Lloyd Ulman, "The Development of Trades and Labor Unions" and "Unionism and Collective Bargaining in the Modern Period." An examination of the changing role of agriculture by John D. Black completes this section.

Part IV, "Regional Growth," consists of Richard A. Easterlin's discussion of regional income trends in the period 1840 to 1950.

Most chapters have a brief section setting forth the analytical framework to be employed in the examination of U.S. experience. Many of the articles make an effort to relate their discussion to current problems and developments. The inevitable repetition is surprisingly small in view of the number of authors.

The book invites comparison with similar collections offered in recent years by Harold Williamson, Lane and Riemersma, Lambie and Clemence, etc. Though generalizations are dangerous for a work of such diversity, by and large the articles in this volume are more analytical. However, the book is certainly far narrower in coverage than the others. Moreover, some areas receive disproportionate attention. As an example of this imbalance, the two chapters on labor unions occupy 116 out of a total of 547 pages or over 20 per cent of the book. While these chapters are of great interest, when compared with the 38 pages devoted to agriculture or the 25 pages devoted to transportation, they are far out of proportion for a balanced treatment.

Teachers of American economic history will find a use for the volume as a supplement to, rather than a substitute for, one of the standard texts in the field. Because of the variation in the level of analysis employed, they will probably find some articles of greater pedagogic utility than others.

H. JEROME CRANMER

*American Bankers Association and
Drew University*

Recursos financieros y reales para el desarrollo. By JOHN H. ADLER. Mexico: Centro de Estudios Monetarios Latinoamericanos, 1961. Pp. 148.

The basic subject matter of this booklet of four essays is economic policy. While at first sight there does not appear to be a direct connection between the four papers, they do have in common the fact that they constitute well-reasoned attacks on certain "sacred cows" of economic policy. Since some of the policy views under attack are widely held in the developing countries, many Latin American economists and intellectuals, to whom this book is presumably addressed, might find the prescriptions contained in the essays bitter pills to swallow.

The first three papers are concerned with taxation and public spending for stimulating economic growth. The last essay analyzes the role of natural resources in the various stages of economic development.

The collection is a valuable contribution to clear thinking in areas which have been muddled either through superficial analysis or value judgments. While much of the ground that this book covers has been gone over before in the economics literature in English, its presentation in Spanish will make a much needed analysis accessible to a vast audience which has had only limited opportunities of examining these issues before.

The arguments put forth in the first essay might be the most difficult for policy makers in the lesser developed areas to accept. Adler vigorously questions the wisdom of highly progressive taxation in poor countries on the

familiar ground of its constituting a disincentive for capital formation. For the same reason he attacks redistributive measures for the purpose of social justice. Adler prefers to substitute for the equity principle of taxation a "development criterion" based on the *net* contribution of a government expenditure toward economic growth ("net" in the sense of discounting from the benefits of the expenditure the negative effects of the taxes to finance the expenditure). Any redistribution of income should be in favor of the entrepreneurial group in order to foster investment activity.

Adler adds a few more prescriptions such as that investment in basic services should be tax-financed, that public works projects should be evaluated on the basis of "full cost" pricing (including depreciation and profits), and that one of the public investment criteria should be the maximization of tax yields from the investment.

These recipes certainly are not easy to follow in a developing country. First of all, a strongly developed social consciousness will make it politically very difficult to think in terms of maintaining a highly unequal distribution of income (not to speak of a widening of the distribution as might be implied by Adler's argument). Secondly, and perhaps even more important, there is no assurance at all that more income for the upper-income groups through lowering or not increasing the progressiveness of the income tax would lead to greater capital formation. The point so often made in lesser developed areas is that the upper-income groups have a very low propensity to invest because of their lack of entrepreneurship and other factors, and that therefore the government must siphon off the potential savings in order to undertake the necessary capital formation for economic development. Although this essay is well argued, I doubt that it will make many converts in Latin America.

The second and third essays deal with the difficulties of deficit spending as a tool of economic growth. In the second paper Adler shows that the major obstacle in the way of stimulating development through deficit spending is the existence of inelastic supply sectors in the lesser developed areas. Because expansionary measures will bring about a redistribution of income in favor of the bottleneck sectors, automatic inflation will be set off long before the full-employment level is reached. In an open economy, of course, inflation might be avoided or mitigated through increasing imports sharply, but this would bring balance-of-payments problems.

It is clear that Adler advocates an attack on the supply rigidities rather than a demand expansion in order to accelerate the rate of economic growth. His discussion in this essay will find favorable echo in Latin America where for several years the "structuralist school," in its debate against the International Monetary Fund, has argued that inflation in these countries is to a large extent based upon inelastic supply problems.

The conclusion of the third essay is very similar, although its line of reasoning runs along an entirely different path. Here Adler attempts to show, with the help of an algebraic model, that a "temporary" inflation provoked by deficit spending (or other measures) cannot bring a permanently higher level of capital formation. Either, says Adler, increased investment activity

reverts to its previous low level or the inflation will not be "temporary" but lead to accelerated price increases.

In the last essay Adler's analysis confirms the proposition that the importance of natural resources declines in successive stages of economic development. While wealth in accessible resources will be a great help in starting the development process, because it lays the basis for export industries and therefore stimulates foreign capital investment, these factors are not as important in later stages of economic growth. This last paper is very useful also in providing a concise discussion of many general aspects of economic development problems.

For Latin Americans, Adler will appear to be a curious mixture of a fiscal "purist" and an economist thoroughly aware of the "structural" difficulties in economic growth. While many would look upon this as an inconsistent combination, I believe that the book will help to show the basic compatibility of that position. If more works by U. S. economists experienced in the problems of economic development were published in Spanish, I am sure that the Latin American intellectual would cease generalizing the image he holds of the North American economist as being an orthodox theorist who has little understanding of the real-world processes of economic growth.

JOSEPH GRUNWALD

*Institute of Economic Research,
University of Chile*

Latin American Issues: Essays and Comments. Edited by ALBERT O. HIRSCHMAN. New York; The Twentieth Century Fund, 1961. Pp. 201. Paper, \$1.45.

This is a good little book on some of Latin America's pressing problems, especially inflation, land reform and the free-trade zone. All but one essay, that of Thomas F. Carroll on land reform, have emerged from a study group set up by the Twentieth Century Fund to promote a dialogue between *latinos* and *yanquis* on current matters of economic policy in Latin America; there are four of the first to six of the second. Each essay adds something to a lively discussion.

About a quarter of the book is concerned with the controversy on inflation between "monetarists" and "structuralists." By now the battlefield is covered with the debris of other wars, but the essential problem is, as Roberto de Oliveira Campos points out, the usefulness of monetary and fiscal policy in checking inflation and the relation between structural factors and the inflationary process. He lobbs over several well-directed shots at the structuralist positions, while David Felix and Joseph Grunwald, in fair, sympathetic but not uncritical accounts of the structuralists, underscore the force of their arguments. Both these authors, who are very much imbued with the Chilean experience, stress that monetary-fiscal action is necessary but not sufficient to bring on the economic growth that is the chief, if not exclusive, concern of the structuralists. Both also suggest that the single-minded devotion to growth may preclude successful action against inflation except by creating an iron-clad statism. Felix's essay indicates that there is a lamentably narrow area

for growth with monetary stability for societies lacking social cohesion. The debate, with insufficient clarity in my opinion, also brings out the asymmetry in the rapidity needed to fight inflation and the long period necessary to carry out tax and land reforms and to remove structural bottlenecks and supply rigidities. Moreover, even if it were admitted that monetary and fiscal measures retard growth, create unemployment and intensify immobilities, letting inflation run on unchecked in order to concentrate on structural problems worsens these same problems; Campos makes much of the induced bottlenecks that inflation brings about.

Raymond F. Mikesell shows that the free-trade zone set up by the Treaty of Montevideo of 1960 will not produce free trade. He writes:

The Treaty was drawn with the deliberate intention of making it unnecessary for any member to make a reduction in its tariff or other barriers with respect to any particular import, or even to undertake a *substantial* reduction of the *average* level of duty or other barriers on its imports, as a matter of compliance with the Treaty obligations (p. 136; his italics).

Its purpose, rather, is to foster the exchange of new manufactured products within the zone by agreements of industrial complementarity that might well come to be private cartel arrangements made at the expense of the captive consumer. But Mikesell also points out that the Treaty's insistence on "reciprocity," though designed for other purposes, may avert this danger. This principle aims to bring about an equality in any new zonal export trade that may arise from concessions members offer each other. This principle not only is directly counter to the productive reallocation of resources within the zone but may keep new trade so low that, along with other restrictive clauses of the Treaty, the hoped-for changes in trade and investment will never occur. It seems to follow from Mikesell's analysis that the operation of the Treaty will have unfortunate consequences or none. Victor L. Urquidí's expression of faith in it does not shake this conclusion. His brief comment suggests that a rapidly growing population, as well as other circumstances, are pushing Latin America into protected regional industrialization. It would thus seem that export-oriented manufacturing industries in Latin America are coming to have the same function in absorbing growing labor supplies that digging holes and filling them had in manufacturing countries in the 'thirties.

Carroll's contribution is a smooth, straightforward account of some problems arising from the fact that roughly 90 per cent of the land in Latin America belongs to only 10 per cent of the owners. After discussing the different types of land holding, he briefly tells the story of reform efforts in Mexico, Bolivia, Guatemala, Cuba and Venezuela, and ends with short notes on colonization schemes and land taxation. He also expresses pessimism as to the peaceful acceptance of needed agrarian reforms. "With the possible exception of Venezuela," he writes, "policy tends to polarize on one side in a 'do nothing' attitude and on the other in a radical, revolutionary stance" (p. 200). This remark raises doubts about the optimism of most other contributors concerning Latin America's future.

In his essay Albert O. Hirschman sketches sympathetically the historical

attitudes of Latin America toward the cause and cure of its economic backwardness. He travels from post-independence days to contemporary Latin American critics of the disguised socialism of the U.N. Economic Commission for Latin America. It comes as a surprise that he finds "considerable originality" (p. 36) in the ideas he reviews for they seem to me, at any rate, to be uniformly derivative. Victor Alba strikes a more accurate note in pointing to the "naturalization" of outside intellectual borrowings.

There is also an interesting discussion of Pan Americanism in which an anonymous American claims that less close relations between the United States and Latin America would make for better relations. In brief comments Hirschman agrees and Lincoln Gordon demurs. Their remarks are judicious and stimulating. The book is paperbound and lacks an index.

THEODORE A. SUMBERG

New York City

The Soviet Industrialization Debate, 1924-1928. By ALEXANDER ERLICH. Cambridge: Harvard University Press, 1960. Pp. xxiv, 216. \$6.00.

Here is an arresting account of the debate on the pattern and speed of industrialization which engaged the best brains in the Soviet Union during the late 1920's. What makes it particularly interesting is that some of these economic theoreticians and strategists were themselves politically active and making the very history of the period during which they hammered out plans with which each camp in the debate purported to transform a devastated economy into a viable one. Examples of the combined economic theorist and political activist are rare indeed. In fact, such examples typically arise in periods of revolution, as in the case of Hamilton after the American Revolution and of Turgot on the eve of the French Revolution. The Russian case represents the most desperate necessity, where the political leaders were forced on the spot to formulate theories and plans for their own survival.

Professor Erlich has largely succeeded in an Herculean attempt to recount the debate in a short volume which obviously emerges from lengthy research into such a tangled jungle of argument. Moreover, the book is intellectually exciting, although difficult reading.

In order to clear the ground for the theoretical debate the author has chosen to separate out as an appendix a brief chronology of events from 1921 to 1929. But this, alas, constitutes the only flaw in the book, because the historical events within and impinging on Russia from the first world war on are precisely the background against which the industrialization debate took place and can now be understood. Were this background available or sketched in more fully by Erlich himself, his own skill in unraveling the complications of the debate would be all the more evident.

Erlich's book starts with 1921 and the New Economic Policy which Lenin himself had instituted after the famous Kronstadt sailors' revolt. The new program, which gave greater freedom of private trade and market incentives to the peasants, was designed as a breather and, as the leftist opposition later called it, a means of providing "primitive socialist accumulation," the alleged counterpart to Marx's primitive capitalist accumulation. The NEP did

not work as planned, however, except to enrich a relatively few Kulaks. As early as 1923, Trotsky had warned the Party Congress of the disastrous lag of industry behind agriculture. Further, in the same year the famous "scissors crisis" developed, in which industrial goods did not sell as a result of their price increases, at the same time that the peasants were simply consuming and hoarding their grain.

In 1924, at the *most* inopportune time, Lenin died, after having recommended that Stalin be removed from his then moderate position of power. Nonetheless, in 1928-29, Stalin, once the representative of the immobile peasantry, had succeeded to absolute power, and began to stamp a long era of terrorism upon all opposition both at home and abroad. During the period from 1924 to 1928 Stalin had adhered to the policy of the NEP, which received its continued theoretical support from Bukharin and Rykov, but was declared bankrupt as early as 1924 by the left-wing opposition headed by Trotsky and Preobrazhensky. Yet to general amazement, Stalin's subsequent policy, evidenced by the rapid industrialization program of the first five-year plan of 1928, far surpassed the industrialization program called for by the left-wing opposition.

Trotsky and company were deported in 1929. Bukharin and Rykov were then denounced as "right-wing deviationists" in the same year. Finally, all the debaters and agitators were purged within or murdered outside the Soviet Union. Preobrazhensky, the "hyper-industrialist," was purged during the trials of 1936-1937. Bukharin, at one time head of the Communist International and editor of *Pravda*, whose "snail's pace" industrialization program had been the official policy of the late 1920's, was himself purged in 1938. Trotsky, after years of exile, was murdered by an agent of Stalin in 1940 in Mexico City.

The debate itself was opened by Preobrazhensky, the chief theoretician of the left opposition in 1924. His full program was set out in his book *Noyaya ekonomika* in 1926, although the main line had been made clear in his article on "The Fundamental Law of Socialist Accumulation" of 1924 and was almost at once denounced by Bukharin.

Erich wrote an excellent article as early as February 1950 in the *Quarterly Journal of Economics* entitled "Preobrazhenski and the Economics of Soviet Industrialization," in which his full appreciation of the master-mind of the debate is more evident than in this current volume, which gives all sides a full hearing. All the evidence points to Erlich's correct evaluation of Preobrazhensky's superiority of judgment over all the debaters, and it may well be the case that this judgment should have been more explicit in this book.

Preobrazhensky's program was essentially that of ending the NEP, of extracting the agricultural surplus through increased industrial prices, and for rapid industrialization through borrowing from abroad in order to purchase advanced equipment for industrialization based on a more roundabout technology which would build *ahead* of current demand. Bukharin and Rykov, whose program was then in effect, instead pleaded for further placation of the stubborn peasantry, which, once liberated from the landlord, at

first refused to buy industrial goods and later refused to sell its own produce. Bukharin's whole program was dominated by a fear of the peasantry and a faith in both the internal market mechanism and the possibility of capital imports. However, he was oversanguine as regards an ultimate union of the workers and peasants, contrary to Trotsky's warning that the two groups were in essential conflict. Similarly he ignored Trotsky's warning that democratic socialism could not be built in one country alone surrounded by a hostile capitalist environment.

In addition to the extreme leftist position of Preobrazhensky, who considered the long run paramount and based his program on the most advanced technology available, and the extreme rightist position of Bukharin, whose program was centered on providing maximum incentives for immediate production by the peasantry, there were other intermediate positions taken in the course of this debate.

As early as 1925 Shanin and Sokol'nikov, both important political figures at the time, while attempting to keep distinct positions, did, in fact, agree that industrial expansion, carried on within obsolete technology, had reached its limit, and that the most profitable area of investment lay in agriculture. At the same time, Bazarov, one of the party's leading intellectuals, preached rationalization of industry and especially electrification, as well as foreign trade as a means of industrialization. Moreover, Bazarov recommended using the internal market mechanism as a check on the efficiency of central planning. Further, he continued throughout the debate to promote one temporary expedient after another and also tried to bring the extremist positions closer together. By the end of the debate the extremists were, in fact, closer together, as Bukharin realized that industrialization would have to be rapid even to take care of replacement demand alone, and Preobrazhensky realized that there were limits to the forced saving by the peasantry for which his program called.

Erich refers to Stalin's "revolution from above" which was made possible by a "unique blend of creeping fear, exhilaration of battle and *la-patrie-en-danger* psychosis" (p. 181), and quite rightly asserts that in such an atmosphere there was no room for continued theoretical debate. Yet the problems persisted and the debate continued, more audibly after Stalin's own demise.

Erich's book is not only a skilful examination of a theoretical debate. It should constitute a lesson for the model-builders of the advanced countries who are generally unaware of this 35-year-old theoretical struggle in a beleaguered and backward country. While the author does develop most of the implications of the debate, he does not indicate one possible conclusion. Marx himself, although the theorist of capitalism rather than of socialism, was probably the best prophet of all in predicting that *democratic* socialism was more likely to occur in an advanced rather than in a backward country. In any case, we must be grateful to Erich for his concise exposition of an unsystematic debate and for the fact that this book will probably lead to further explorations back into Russian history and ahead into the problems of the now developing countries.

BERNICE SHOUL

Cambridge, Massachusetts

Estructura económica de España. By RAMON TAMAMES. Madrid: Sociedad de Estudios y Publicaciones, 1960. Pp. 677.

With the support of the International Monetary Fund and the OEEC, the Spanish government in July 1959 adopted a program of monetary stabilization and trade liberalization the success of which has led to new and increasing interest abroad in the Spanish economy and in the opportunities for trade and investment. Spain today is clearly a developing country. Although agricultural and mining products (and among them, citrus fruits) account for the bulk of her exports, some sectors of Spanish industry—notably textiles, shipbuilding, iron and steel, and a number of consumer goods—have a long history of high-quality production. During the past 20 years, moreover, and especially since the early 1950's when substantial United States aid began flowing into the country, priority has been given to industrial development which has shown considerable progress in a hitherto protected environment.

While a good deal of the present-day structure of the Spanish economy has been revealed by the annual *Estudio Económico* of the Banco Central (a commercial bank) and by the national-account estimates prepared by the official Consejo de Economía Nacional, to date there has been no general, comprehensive handbook on the history, development, and performance of the economy as a whole and of its various sectors. The book under review does not quite fill that gap, although the wide range of topics covered, the great wealth of detail, and the mass of statistics (which often go back to the early part of the century and, in most cases, through 1959) undoubtedly make for a collection of material such as, to quote the preface, "cannot be found gathered in any other single work."

The volume, in a total of 38 chapters, deals with the country's economic geography and population; agriculture (10 chapters); industry (10 chapters); transportation; services; foreign trade; national income; the institutional framework; and problems of development, stabilization, and European economic integration. The author's approach and treatment has been such that these parts, and even individual chapters, can be read as separate and self-contained monographs. The professional economist (as well as the economic historian) who is willing to make his way through the mass of material will find much that is of interest, particularly in the chapters on the banking, monetary, and fiscal systems (Ch. 26, 31, and 32), on commercial policy (Ch. 28), on national income (Ch. 30), and on regional planning (Ch. 36). The value of these chapters, most of which include a historical survey, is enhanced by numerous footnote references to what appears to be a fairly vast body of generally unknown Spanish economic writings.

Yet the book suffers from a number of basic weaknesses. For one thing, the extensive coverage and the author's obvious desire to include as much information as possible make for an exceedingly uneven treatment and hence for a finished product that bears similarities to both the World Almanac and the encyclopedic surveys prepared by the Woytinskys. This somewhat jarring juxtaposition of statistical fact and higher scholarship is accentuated by the author's often clumsy attempt to incorporate elements of economic theory (such as the equation of exchange, the multiplier, and the marginal propensity to import) into his otherwise quite factual presentation. Secondly, while

the monograph-like treatment of each section and chapter greatly facilitates the task of the reader interested only in a particular topic, it makes for a complete lack of integration of the material and leaves the book without a central, unifying theme. Finally, there is no real evaluation of current economic conditions and prospects, or recognition of the still marked degree of inflexibility, monopoly, and controls in the Spanish economy (such as even official Spanish agencies, including the Ministry of Commerce, have shown recently). However, such criticism probably expects of the author more than a private individual could say under present circumstances.

JOHN HEIN

Federal Reserve Bank of New York

The Development of the American Economy. By AUGUST C. BOLINO. Columbus: Charles E. Merrill Books, Inc., 1961. Pp. xi, 609. \$7.50.

Although American economic development textbooks have appeared in growing numbers in recent years, they vary widely in quality, and first-rate studies are always welcome. In terms of conception, organization, analysis and narration, Bolino's textbook is first-rate. Probably its chief merit is its fundamental economic approach to American history—an approach which skillfully blends economic thought and practice and identifies “economic causes and results in the maze of historical events.” Growth theory and concepts of capitalism are traced in the writings of Smith, Marx, Sombart, Weber, Tawney and Schumpeter, not to mention the traditional interpretations of American historiography.

It is not surprising that scholars who glorify the role of innovators in history should themselves experiment in constructing textbooks. One of Bolino's chief innovations consists of periodization. Since the pace of development has varied among different economic sectors, he feels it is incorrect to believe that the Civil War divides the premodern from the modern economy in all cases. Rather, he selects significant watershed periods, or periods of so-called economic revolution, to mark the two-fold division of the book. The periodization charts which appear inside the front and back covers of the book help the reader to see the relationship between the chronological and topical approach.

Part I, which occupies about one-third of the book, treats the beginnings of the U.S. economy. Three chapters (59 pages) are devoted to the European background, colonial period, American Revolution and Constitution. When it is considered that the year 1789 ends the first half of American history, the reader may wonder if this long and eventful period has been sufficiently appreciated. Subsequent chapters in Part I concern agriculture, mercantile capitalism, money and banking, transportation and labor. As a central theme, government economic policy in the early national period is regarded as a blending of the best features of Jeffersonianism and Hamiltonianism. The reader who may be surprised to find only one index reference to the Civil War will discover that economic aspects of this struggle are discussed topically in different chapters.

Part II concerns recent economic history, or the period subsequent to the various economic revolutions. Two main trends are stressed: “the declining

influence of the West in general and the farmer in particular"; and "the growth of American manufacturing and the rise of the United States to a position as the leading industrial power in the world." The author brings the complex strands of the economy into focus in nine chapters dealing with big business; big labor; big government; the farm problem; money and banking; business cycles; transportation; modern war; and productivity, income and growth. In the generally optimistic view of the author, U.S. industrial capitalism enjoyed periods of exuberant growth accompanied by financial excess and widespread abuse. Countervailing forces then set in motion popular movements to harness business enterprise to broad social objectives. But not until the great depression of the 1930's was it possible to reform capitalism so as to achieve a balance between forces making for enterprise and growth and those concerned with social justice. After surveying leading problems in the contemporary scene, the author concludes: "The problems, then, are minimal, and we can look forward to a highly prosperous decade in the sixties."

If the question of prosperity in the 'sixties is debatable, that of America's growing involvement in the international economy is beyond dispute. Apparently this "indisputable" question is of little concern to the author, for international relationships are treated only peripherally, chiefly in connection with the two world wars. Indeed, little effort is made to illuminate the background of the emerging multipowered world and the challenges and opportunities that lie ahead in our relations with the developing nations.

Despite the neglect of international economic relationships, Bolino's textbook has several features which will recommend it to instructors and students. Each chapter has a summary, review questions, and additional readings which are listed topically. A feature of special prominence is the incorporation of new literature, including journal articles and studies by the National Bureau of Economic Research, Hoover Commission, Paley Commission, National Commission on Money and Credit, and investigations of Congressional committees. Ably summarized, these studies enable the reader to probe deeply into problems, and with the aid of hindsight, weigh the merits of alternative plans of action.

The author has written an economic development textbook which successfully integrates basic principles of economics and growth theory with the American experience. It is a problem-oriented book, drawing on historical events which have surrounded these problems in the past and present. The analysis and interpretation are of a high order. The book, which is intended for all levels, is very readable and teachable.

RICHARD B. SHERIDAN

University of Kansas

An Economic History of England 1870-1939. By WILLIAM ASHWORTH. New York: Barnes & Noble; London: Methuen, 1960. Pp. vi, 438. \$7.00.

This is an English textbook. It is therefore of a different genre from that of the usual American textbook. In Ashworth there is a conscious and explicit attempt at high-order scholarship; not so much so as in J. H. Clapham but more so than in W. H. B. Court. Both Clapham and Court cover the period

treated by Ashworth, but also much else. Ashworth utilizes a great deal of the recent literature dealing with events falling within the period, literature which was not available to Clapham or utilized by Court.

Being a textbook the narrative is mainly descriptive of the events of the period. Where Ashworth does attempt explicitly to utilize economic analysis of his materials the results can be pretty strange; e.g., in the underemployed economy of the mid-Victorian era (a great deal is made of this underemployment) Ashworth notes that the high rates of spending out of current incomes by the "labouring masses" still had no "adverse effects upon the growth of the national capital" because their relative share of national income was still so small (p. 20). Throughout, this is the treatment of net capital formation, a treatment which would be appropriate to a fully employed economy where full utilization of resources would necessitate a cut in consumption to increase investment. This in the world of Ashworth's Victorian England is pretty strange; he evidently believes that, in spite of underemployment, an increase in consumption must necessarily constrain investment.

Again, we find (p. 103) that in coal mining in the 1880's "... further exploitation of this wasting asset was beginning to involve increasing costs." Did they operate *before* the point of diminishing returns? Or if this is supposed to be a "long" run argument, rising unit costs tell us nothing *by themselves* of profitability of operations, and indeed, the continuing expansion of output in this period noted by Mr. Ashworth indicates that "increasing costs" incurred in working this "wasting asset" were being currently absorbed by revenues. There is a lot of this sort of thing in Ashworth's book. On the other hand, in too much of the book when events under discussion virtually cry out for some use of economic analysis none is forthcoming; e.g., there is no systematic discussion of the possible consequences for British investment of the high interest rates and falling prices which resulted from government policy in the 1920's (Ch. 16). Perhaps there were none and the long disinflation of the 1920's made industrial investors feel bullish. If so, what held them back?

A further general criticism which must be made concerns the shapelessness of the discussion, due both to a lack of any general thesis (understandable in a textbook) and of any sustained application of economics to the organization and treatment of materials. The lack of a firm framework of economic analysis means that the reader will travel through chapters of descriptive materials, data, discussions of institutional change and so forth, without finding any underlying point to the discussion. A baleful example of this is the narrative of Chapters 14-15 wherein the reader finds a detailed treatment of structural and organizational changes in 1918-1939 which is not illuminated by systematic discussions of either the "cyclical" or "transformation" (he has Svernilson in the footnotes) problems of the period. As a result the great events stand in splendid isolation like the Colossus of Memnon while the minutiae, like the discussions of changes in retailing practices, just choke up the narrative. The book therefore is difficult reading and the reader who doesn't already know a good deal of the economic history of these years may find himself at sea a good bit of the time.

A continuing irritant to this reviewer is the unreconstructed "Bleak Age"

treatment of industrial growth in the early chapters. It has been a long time now since rising income and investment have been viewed as unmitigated horrors which destroyed Merrie England. There has been a lot of work recently regarding the standard of consumption in Britain and the industrialization of the country before 1850; so far as I know no one applied the "pessimistic" view to the long Victorian boom of 1850-1870 until this volume.

There are many criticisms of detail which could be made. But this would be the case in almost any study of economic history of such complexity and covering such a long period of time. The present reviewer's opinion is that this book has serious flaws as a result of sometimes bad, sometimes non-existent, application of economic analysis to the material at hand. The effects are ubiquitous in the book. On the favorable side, Ashworth has covered a great part of the recent advances in our empirical knowledge of the Britain of 1870-1939. The scholarly apparatus is complete, at the bottom of each page, and the book will doubtless find a wide use.

J. R. T. HUGHES

Purdue University

Statistical Methods; Econometrics; Social Accounting

Government Price Statistics: Part I, Hearings before the Subcommittee on Economic Statistics, Joint Economic Committee, 87th Congress, 1st Session. Washington: Supt. Docs., 1961. Pp. 526. \$1.50. Report of the Subcommittee to the Joint Economic Committee, 87th Congress, 1st Session. Washington: Supt. Docs., 1961. Pp. 13. 10¢.

Commissioned by the Bureau of the Budget and prepared by the National Bureau of Economic Research, the major volume listed above contains the report of the Price Statistics Review Committee of economists and twelve staff papers exploring specific aspects of the federal government's price statistics.

In anticipation of the overdue revision of the consumer and other price indexes which will be made in the next few years, the weaknesses and inadequacies of present indexes are discussed and recommendations for their improvement and expansion are made in this volume. While space limitations do not permit an adequate summary of the contents and findings, there are several observations and criticisms which may be made. A minor annoyance is the printing; it is unfortunate that our government cannot be a little more generous with the format of its publications. Surely a more readable print would not increase the admittedly low price very much.

Perhaps the most significant point of the study is the emphasis on and the demonstration of the difficulties involved in constructing index numbers to measure changes in complicated variables. The problems and hazards of choice of methods, materials, and categories are well described. There is some duplication in the separate papers; this is inevitable in the use of widely separated experts, but it is not excessive. Altogether, a thorough discussion of the historical, technical, and theoretical problems of index numbers is provided.

The inadequacies of government work in statistics due to limited financial

support are evidenced and leave one with the realization that the cheapest way is not always the least expensive. With the resources of our affluent society it seems incredible that private and public economic decisions must be based on data that are inadequate as a result of budgetary restrictions.

The primary problem of the price index is indicated by Congressman T. B. Curtis' queries about variety and quality measurement (pp. 7-8). R. T. Bowman of the Bureau of the Budget in his presentation of the report admitted the difficulty of making price comparisons, and pointed out that "this is the area in which the report of the committee will be subject to the greatest amount of controversial statements."

Under Chairman G. J. Stigler the Review Committee limited its survey to the consumer price index, the wholesale price index, and the indexes of prices paid and received by farmers. Their report concludes that revisions of the bases and weightings are too infrequent, and that as a result there is a "failure of price indexes to take full account of quality changes" (p. 35). This conclusion is documented and expanded by Zvi Griliches in his excellent paper on automobile improvements, and in Albert Rees' fascinating use of mail-order catalogs for price comparisons. One wonders if this latter technique might not be used to obtain a better farm price index since the importance of the mail-order house to the farm family is well known.

In addition to considering the problems of constructing adequate indexes for agricultural comparisons, the papers on the farm indexes raise questions of policy. Both G. Shepherd and E. R. Swanson give insights into the farm problem in their studies of agricultural indexing. This reviewer believes the extent of tax evasion by the farmer and the possibility of double-counting in the determination of farm costs (gasoline tax remissions, housing, etc.) should be examined with a view to gaining greater accuracy for these indexes.

Several of the staff papers seem overly technical, but this may be unavoidable since they are attempting to break new ground. The Impact of Motor Freight (W. Y. Oi, D. E. Lund, and P. P. Bestock), Seasonality Effects (V. Zarnowitz), Validity in the WPI (J. Flueck), Sampling Considerations (P. J. McCarthy), and Stability in the CPI and WPI (H. E. McAllister) are the subjects and authors of five staff papers. Congressmen and other noneconomists or statisticians may have difficulty with the papers by Zarnowitz and McAllister, but they raise technical problems that demand consideration. P. O. Steiner's "Consumer Durables" discusses "appreciation of assets," a rather untypical phenomenon compared with depreciation, and unfortunately his conclusions may be too technical for effective application. The analysis of "Special Classes of Consumers" and their different index requirements is stimulating and needed, but Eleanor Snyder ignores free goods and other low-cost alternatives for low-income groups. The importance of outpatient clinics and government surplus foods should be considered in these special indexes of living costs.

These are excellent and stimulating studies, and a careful reading of this inexpensive volume will give an understanding of index numbers, their use, and the problems of government price statistics. It should make a real contribution to the development of more adequate measuring-sticks for prices,

particularly if we want "to modify the CPI in the direction of a welfare index" as the Committee recommends (p. 55).

One disturbing matter is the treatment of taxes. R. A. Kessel's brief article is interesting but not very useful. With our CPI based on 1947-49, this reviewer can see no justification for his inquiry into real wages being based on 1929. In addition, since the objective of the CPI is to measure the purchasing power of the dollar, the inclusion of the difficult problem of determining real wages makes the task even more complicated. There is a very real problem in indexing the impact of direct taxes, but Kessel's analysis does not provide answers or a method for finding them.

Although the Review Committee recognizes the impact of taxation and government services on the price index, they recommend no changes but "much research" (pp. 54-55). In this reviewer's opinion this delay would be most unfortunate, for preliminary findings indicate these two aspects of government finance have had very significant effects on the CPI and particularly so since the 1947-49 base years. These effects must be determined and taken into consideration in revising the index if we are to avoid the continued overstatement of inflation that it presently contains. Furthermore, the goal of a welfare index cannot be achieved without this important modification of the CPI.

In its brief *Report* on the recommendations, staff papers and subsequent hearings, the Subcommittee on Economic Statistics concludes "this Nation has the best statistics in the world. We want to keep it that way." It urges expanding research by government and private agencies for "continued improvement" (p. 2). Modifications, expansions, and corrections in the various indexes which were recommended by the Review Committee are generally accepted as a means of achieving this goal. However, because of the conflicting and inconclusive discussions at the hearings, the question of a "market basket" or "welfare" index is answered by "what seems to be the practical working conclusion at this time . . . to try to measure the change in prices of a package of goods and services which consumers indicate by their performance in the marketplace gives them equivalent satisfactions." The Subcommittee then recommends more research on "the concept of trying to approximate as closely as possible the cost of a constant level of living" (pp. 11-12). Certainly this should be the objective of the CPI.

ALFRED E. PIERCE

Lafayette College

Economic Systems; Planning and Reform; Cooperation

Has Capitalism Changed? An International Symposium on the Nature of Contemporary Capitalism. Edited by SHIGETO TSURU. Tokyo: Iwanami Shoten, 1961. Pp. iv, 222. \$4.00.

Wanting to know whether capitalism has developed a sufficient immunity to depressions to survive, what its long-term prospects are, especially in the United States, and how capitalism may be gradually transformed into socialism, the editor of this volume, a Japanese economic theorist, expressed his

views in about a third of the book, secured eight other economists to react to the same issues, and rounded off with a chapter on "unsettled problems" plus an appendix entitled "Reflections on Capitalism." The symposium makes stimulating reading.

Tsuru's own thesis is that, although the institutional aspects of capitalism have changed and will continue to do so, its "essence," which is the difference between it and socialism, has not altered. The acid test is, "Who controls the surplus?" Under capitalism "surplus value" is appropriated by the capitalist class and "profit generally is destined to investment." Under socialism the surplus takes the form of a "social fund." Capitalism's weakness is that if the surplus increases more rapidly than the effective demand, there is first a glutted market and then a depression. Tsuru concludes that although it cannot be said categorically that the United States will never again have a major depression, nevertheless a number of factors, chief of which are new technologies, defense expenditures, and governmental policies and institutional stabilizers, do permit the cautious conclusion that whether "the U.S. economy will continue to prosper has still to be tested by future events" (p. 209).

Some of Tsuru's uncertainties as to the future of U.S. capitalism relate to whether the state can become a "superclass organ" working for the common interest of the common people; whether defense expenditures will increase relatively as fast as over-all production; and whether the profit incentive will continue strong enough to assure high-level production even though the state continues to redistribute wealth. If the surplus is not to be funneled into conspicuous consumption (which seems unlikely), then some way must be found to finance the social fund for schools, roads, and all the other community services which capitalism seems unable to support as readily as socialism does.

Tsuru's general theoretical conclusions regarding capitalism are that a high level of profits is essential, that most profit is destined to investment, that public policies which encroach on profitability will be stubbornly resisted by the capitalist class, and that there is a constant pressure to sell in order that profit may be realized. One of our problems, he says, is that the typical U.S. businessman "hates and fears" the organized political state (p. 81).

At the end of his essay the editor concludes (without adducing proof, however) that capitalism will finally become debilitated, will eventually draw the last curtain on itself, and that therefore the long-range problem is how to effect the transition to socialism as peacefully and as tidily as possible.

The editor's own evaluation of the success of the symposium vehicle is that only three of the eight collaborators answered his questions directly; that instead of dealing with "empirically testable" data in an "operational" fashion, most of the participants were inclined to drift off into their own theories (appropriate in their place). He did find, however, that most of the commentators agreed with some of his major positions. John Strachey and Charles O. Bettelheim (the latter writing in French) concluded, for example, that without high profits, prosperity cannot be sustained. Also, even Strachey, author of *Contemporary Capitalism*, apparently agrees that the *form* of the surplus distinguishes different economic systems.

Comments from other contributors are not easily telescoped. Paul M.

Sweezy remarks that there is no reason to make the Schumpeterian assumption that now or in the future "waves of innovations must necessarily be associated with waves of increased investment" (p. 84); Paul A. Baran thinks that underconsumption is worth more attention than traditionally it has received; Yakov A. Kronrod (writing in Russian) argues that political factors such as the end of colonialism as well as structural factors such as oligopoly will inevitably cause the demise of capitalism; Maurice Dobb denies that there is such a thing as a "new stage" of capitalism; and J. K. Galbraith renews his defense of countervailing power as chief guarantee that capitalism will retain its decentralized characteristics.

All of which makes interesting reading. There may be some doubt as to the legitimacy of the subtitle, "International Symposium," for most of the contributors were apparently more than half convinced before they wrote that socialism is inevitable. The editor welcomes additional commentary and, considering his sparkle and vigorous approach, a generous response would be amply justified.

MARSHALL E. DIMOCK

New York University

Problemy tsenoobrazovania i politika tsen. (Problems of Price Formation and Price Policy.) By G. CSIKOS-NAGY. Moscow: Sotsekgiz, 1960. Pp. 477.

This book is a revised edition, translated into Russian, of the 1958 treatise by the chief of communist Hungary's Office of Price Administration. The author displays both a first-hand knowledge of empirical facts (which other writers on the subject usually lack) and a theoretical perception of his complex problems. In this book he supplements his own experience in Hungary with detailed summaries of recent discussions of value theory and price systems in Poland, East Germany, Czechoslovakia, and the Soviet Union. In scope and character, the treatise is similar to that of Sh. Ya. Turetsky, reviewed in this journal in December 1960, but theoretically it attains a higher level of abstraction and insight.

From under the mountain of data and information on price formation and price policies in Hungary, a brooklet of Csikos-Nagy's own cautiously worded opinion trickles through: being a seasoned practitioner in both economics and politics, he does not take seriously the talk about the "labor law of value" as a factor in "socialist" price formation, though he pays lip-service to it on suitable occasions. Since all centralized planning and decisive decision-making is done in terms of material balances *in natura*, rather than in money, he knows, and says so, that prices do not regulate the over-all allocation of resources in his economy. The limited role of prices Csikos-Nagy sees to be only the following: (1) to serve the purposes of accounting and economic analysis; (2) to help distribute the national income (a) between consumption and capital formation, (b) among the classes of consumers, and (c) among the territories; and (3) to stimulate, in the short run, the allocation of resources on the local, decentralized, microeconomic level within the framework of the master plan.

As far as the rules of price formation are concerned, Csikos-Nagy rejects,

as unrealistic and inapplicable to a nationalized economy, both the equalization of rates of profit and marginal cost pricing. His argument against these—and, in fact, all other—rules is bluntly frank: they would curtail the government's freedom to allocate resources politically as it pleases. Of course, he does not advocate irrational behavior or an outright voluntarism on the part of the government. He warns against possible disproportions and pitfalls, and advises the use of various test formulas in finding an optimum variant for a particular decision. His point is, however, that such formulas are only tools of analysis; they are not rules and must not be accepted as, or written into, laws.

Furthermore, since government policies, demand, costs, technology, productivity and other environmental circumstances change often and rapidly, the centralized price administration is not able to respond and adjust prices quickly enough to accommodate any specific rules. The mechanization of accounting and calculation is still insufficient and backward, and the cost of price changes is high. The author insists that his office can change its "millions" of prices only once in two years, although he hopes that soon this response-lag may be cut to eight months.

Csikos-Nagy believes that the relative prices of producer goods as well as the wholesale prices of consumer goods should be fixed "in accordance with various considerations," viz., politically. Only for retail consumer-goods prices is he willing to furnish a more objective foundation. The general level of these prices is designed to equate total supply and demand so as to allocate the national income between consumption and accumulation. But in respect of individual consumer-goods prices Csikos-Nagy comes out in favor of "protecting the consumer's interests": he rejects the use of prices to equate each particular supply and demand; for otherwise, he says, short or unwanted supply is protected from demand; he proposes instead to adjust the structure and the volume of supply in accordance with demand, while holding the price level constant. This is a commendable idea, of course, if only it were put into practice.

VSEVOLOD HOLUBNYCHY

Columbia University

Business Fluctuations

Business Cycle Indicators. Edited by GEOFFREY H. MOORE. Two vols. Princeton, N.J.: Princeton University Press for National Bureau of Economic Research, 1961. Pp. xxxv, 737; xvii, 179. \$12.50, \$4.50; the set, \$15.00.

These two volumes should be looked upon as the fourth and fifth of the National Bureau series on business cycles which began in 1927 with Wesley C. Mitchell's *Business Cycles: The Problem and Its Setting*. The dominant figure in their authorship is the editor, Geoffrey Moore, who has prepared eight of the 20 chapters in the first volume as well as editorial introductions to both volumes.

This review will be confined to the first and longer volume of the pair. It is made up of 20 papers, several published previously, relating to some aspect

of the National Bureau's leading-series and diffusion-index approaches to business cycle analysis. (The second volume, more exclusively a reference work, is an annotated collection of basic data, adjusted and unadjusted, on the individual series used most widely in the National Bureau's business cycle studies.)

The fundamental first volume is in turn divided into three parts, following the editorial introduction. Part I deals with the selection and interpretation of indicators. To the practical man, it is the nub of the entire opus. Largely written by Moore himself, it includes as Chapter 7 his famous 1950 monograph on "Statistical Indicators of Cyclical Revivals and Recessions." The argument, stripped to its bare minimum, is that a number of "leading" series, singly and in combination, systematically undergo their peaks and troughs in advance of the general business cycle. The behavior of these leading series, particularly the peaks and troughs, combined with the similar leading behavior of the percentage of all "cycle-conforming" series which are rising (diffusion-index) permit the forecasting of cyclical revivals and recessions with a reasonable degree of accuracy, despite the unavoidable lags in the publication of the data themselves. Moore and his colleagues appear to have made their point, particularly since Canadian data (Ch. 10, by W. A. Beckett) confirm that for the United States. Statistical critics both here and abroad have objected to diffusion indexes, arguing that they behave like rates of change of the over-all series themselves. This argument seems to this reviewer irrelevant. What if diffusion indexes do behave like rates of change, or are related to them mathematically? Diffusion indexes are smoother, more easily computed, and most important, more reliable.

Moore has also claimed that National Bureau methods can predict the depth of a recession as well as the timing of its onset and ending (Ch. 5, "Measuring Recessions"). This claim seems at this writing to have been premature. Written during the 1957-58 recession, Moore's paper classifies that episode as considerably more severe than it now appears on the basis of historical hindsight.

The six essays of Part II, with Victor Zarnowitz their leading spirit, are of greater interest to the theorist. Moreover, few of them have been published previously. They ask the question, why do particular leading series lead the business cycle consistently, while some related series do not? (For example, why do business failure *liabilities* lead the cycle, while business failure *numbers* do not?) The series examined, in addition to those on business failures, relate to corporate profits, incorporations, orders, and the length of the work-week. In each instance a plausible explanation is developed for an observed lead. In some cases this explanation confirms the obvious, but in others, including business failures, it does more. What apparently happens in the case of failures is that a diffusion index of the proportion of firms with rising profits leads the cycle and is approximately coincidental with the liabilities series. As the proportion of reasonably large corporations with increasing profits declines, these firms find it difficult to raise capital. Moreover, the limited-liability feature of corporate charters increases the importunity of corporate creditors. Some companies are accordingly forced into failure,

with relatively large liabilities. The total number of failures, however, is dominated by small unincorporated firms which fail for "personal" reasons relatively independent of the cycle and certainly not leading it.

Part III, and especially the contributions of Julius Shiskin, is more technical and of interest primarily to statisticians and "computer-economists." It deals with adjustments to leading series designed to improve their quality, as by electronic-computer methods of removing seasonal and random fluctuations and by conversions to approximately equal cyclical amplitudes.

Save for Moore's defense of the diffusion indexes (Part I, Ch. 9), controversy is reduced to the minimum. Nothing is said of rival forecasting methods, e.g., the more ambitious econometric models of the Klein-Goldberger school. The interest of at least this reviewer would have been whetted by direct comparisons between the efficacy of these two approaches. It is nonetheless safe to forecast, by methods less refined than any combination of leading series, diffusion indexes, and econometric models, that this set of books will occupy a prominent place in the libraries of specialists on cycles and forecasting for many years to come.

M. BRONFENBRENNER

University of Minnesota

Des mouvements de longue durée Kondratieff. By GASTON IMBERT. Aix-en-Provence: La Pensée Universitaire, 1959. Pp. xii, 535. NF 45.00.

Gaston Imbert's book, originally submitted as a doctoral dissertation at the University of Aix, encompasses a broader area than Kondratieff waves. It is an attempt to document the existence of long swings in economic activity since the 14th century and to advance some tentative views as to their causes. This is accomplished mostly by presenting a vast array of statistical data and by reviewing a good deal of relevant literature. The critical examination of a host of theoretical and empirical studies leads to the extraction of a number of hypotheses fitted into a structure which remains elusive and tentative. The extensive bibliography is quite unsatisfactory.

The first part of Imbert's book reviews very briefly the literature dealing with secular trends and with various types of cycles of a duration longer than the conventional business cycle. It then reviews statistical evidence of long movements since the industrial revolution, first in the price series and then in the industrial and agricultural production series. This is supplemented by a brief discussion of some interest and income data, which is followed by a review of long movements in some series reflecting "sociological phenomena," ranging from suicide rates to strikes and business failures. The first part concludes with a review of a collection of price series to show the existence of more or less coincident long periods of rising and falling prices in the main European countries since the Middle Ages.

In the second part, various theories on long swings in prices and in economic activity, neatly classified by schools (with quite a number of puzzling and questionable labels) are reviewed, with Kondratieff and Schumpeter sharing the limelight with authors of obscure dissertations and long-forgotten casual articles.

It is only in the last half of Part III that the endless procession of names and quotations and the welter of footnotes vanish and the author's own contribution begins to emerge. He is concerned with a broad panorama of long swings in economic life since the late Middle Ages. The discussion switches back and forth between secular trends and long cycles, with a disconcerting lack of analytical precision. Four broad periods (or "trends," to use the author's terminology) are distinguished and contributory causes which may explain the alteration of periods of expansion and contraction are discussed. For the two precapitalist periods (the "medieval trend," 1250-1510, and the "mercantilist trend," 1510 to 1720/40), it is suggested that long-term price swings can be explained by demographic factors and by wars.

The capitalist period, which contains four Kondratieff's between 1787 and 1933, is linked to the mercantilist period, in an unexplained way, by the first "precapitalist Kondratieff." Borrowing heavily from Schumpeter and Ciriacy-Wantrup, and introducing the acceleration principle, Imbert presents his explanation of Kondratieff's in the capitalist period in terms of an interplay of wars and innovations. A postwar contraction is followed by a stabilizing trough. The revival gets underway under the impact of innovations, followed by a wartime expansion which, in turn, generates a period of expansion based on reconstruction; gold production and changes in agricultural output are additional explanatory factors.

A very sketchy concluding chapter deals with the "planist trend," ushered in by the Great Depression and the growing participation of government in economic affairs. After approvingly quoting Schumpeter's pessimistic views as to the chances for survival of capitalism, Imbert offers his thoughts on proper policies designed to offset forces which generate long-term swings under the new conditions. One of the more original suggestions is that the high-wage policies of American labor unions might now perform the function which Schumpeter assigns to depressions—to lay the groundwork for a new wave of innovations by eliminating marginal enterprises.

In a laudable effort to cover all pertinent European and U.S. literature, the author ranges from Ricardo to Hansen. Yet contemporary literature on economic development and growth is disregarded, as is the entire contribution of econometrics. Judging from the one area with which this reviewer is particularly familiar, the author's attempt to solve language problems by quoting from secondary sources is somewhat less than successful.

In spite of the large number of charts and tables, supplemented by an appendix giving the equations for all fitted trends, Imbert makes no original contribution to empirical knowledge or to statistical analysis of economic change. His statistical analysis does not go beyond fitting trend curves or computing deviations from moving averages. A whole generation's progress in the statistical analysis of economic data has been bypassed by the author.

Imbert's study somehow reminds one of Kondratieff's own use of statistics and historical facts. Undue reliance is placed on long-term statistical series without proper inquiry into their make-up and significance. A wide range of political and social developments is referred to without ever providing a rigorous demonstration of the process through which they are supposed to origi-

nate wave-like movements. The statistical data are drawn from publications ranging from the well-known investigations sponsored by the International Scientific Committee on Price History to special studies of a fragmentary character and, even more frequently, from secondary sources. The unevenness of the underlying statistical material is witnessed by the fact that both U.S. wage series used (one being that for female textile workers in Massachusetts) are taken from two Belgian studies. The general nature of analysis is illustrated by the following conclusion concerning price data pertaining to medieval France:

Prices rising or at high plateau	64 war years	43 peace years
Prices falling or at low plateau	40 war years	77 peace years

These figures demonstrate well the correlation between long-term price rises and wars and long-run price declines and peace. (p. 397)

In spite of its articulation into almost two hundred subsections, Imbert's study is loosely organized and diffuse. Historical and statistical material is not firmly integrated with the analytical material which ranges from a tedious recital of who said what and was challenged by whom to tantalizing hypotheses not clearly stated or tested.

The American reader will find in G. Marcy's lucid five-page introduction a quite satisfactory summary of the scope and focus of Imbert's study.

GEORGE GARVY

Federal Reserve Bank of New York

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

1960 Survey of Consumer Finances. Ann Arbor: Survey Research Center, University of Michigan, 1961. Pp. xxii, 310. \$7.50.

This important volume brings together in compact and usable form a large number of significant facts concerning the financial affairs of U.S. households. Surveys of consumer finances have been conducted annually since 1946 by the Survey Research Center of the University of Michigan. This group of social scientists first planned an extensive study of consumer finance while serving with the U.S. Department of Agriculture in 1944. After leaving the federal government the group continued the studies and with the aid of the Board of the Governors of the Federal Reserve System has published the more important findings each year in various monthly issues of the *Federal Reserve Bulletin*, the last figures appearing in 1959.

The purpose of these surveys is to promote an understanding of human behavior and hence of the U.S. economy by obtaining previously unavailable statistical data through personal interviews with a representative sample of consumers. Primary emphasis is given to presenting time trends of changes in magnitude and distribution of consumer income and assets, and to studying economic attitudes of consumers. The aim of the book is to furnish as much raw data as possible. Interpretative analysis and discussion of theoretical methods are kept to a minimum.

The book has three parts. The first and largest part is devoted to the presentation of consumer financial data. The second part is concerned with consumer attitudes and inclinations to buy, and the third is a methodological appendix. Tables of numerical data dominate the book. Each chapter opens with a descriptive statement explaining exactly what the tables contain, how they were prepared, what they mean, and how they can be used.

The first eight chapters present for households and spending units figures on income, employment, purchases of durable goods, housing, liquid asset holdings, life insurance, common stock holdings, distribution of assets, and installment and other debt. These data are classified and assembled for comparative purposes in several ways. The general classifications by size of income, life-cycle group, employment status, occupation, and educational experience are used most frequently. Some data are classified by income quintile groups; and geographic distribution is occasionally shown. Historical trends are developed by frequent comparison of the 1959 figures with those from earlier surveys.

The next five chapters are concerned with consumer attitudes toward economic conditions and with expectations of acquiring durable goods and other assets in the future. In the attempt to measure optimism and confidence, information is collected on planned expenditures, due attention being given to the individual's willingness to buy, as distinguished from his ability to buy. Consumers are asked to express their opinions on future political and business changes and on probable future prices of consumer goods; and also their feelings about their own future financial position. From these responses the Research Center constructs an index of consumer attitudes, which shows by "better," "worse," or "no change," the varying degrees of confidence in the future. Using the same material, forecasts of consumer demand are made and some monthly outlook estimates are tabulated. An interesting appendix to this section tells about reinterviewing respondents by telephone between annual surveys.

In the remaining four chapters a frank discussion of the *modus operandi* of the Research Center adds greatly to the value and authenticity of the figures. Method of selecting the sample, the training of interviewers and actual processes of interviewing are all carefully explained, together with a discussion of the analytical and statistical techniques used in handling and working up the data. A glossary defines specific terminology. The problems of sampling error and reliability of data are discussed in connection with the tendency of respondents to give inaccurate or no answers to questions concerning amounts of income and purchases and other dollar valuations. Inclusion of the actual questionnaires showing exact wording of the questions asked by the interviewers is most helpful to users of these statistics, particularly of the data reflecting consumer attitudes. The book closes with a comprehensive bibliography of published and unpublished papers and monographs by members of the Research Center and others who have used the material of these surveys. In addition are listed some studies based upon other sources of consumer financial information.

The research the results of which are presented here is of a high order. An

attractive feature of the book is the tabular format which makes the tables unusually easy to consult and understand. Complicated development of statistical formulas and computations is largely avoided but where necessary the explanations are given in simple terms. The detailed findings are of considerable theoretical and practical value to all students of consumer demand and to persons engaged in market research, as well as to policy-makers in both business and government. The thoughtful consumer who is interested in budgeting and in evaluating his own financial status will find much in the way of guidance and assurance in the information herein presented.

JANET L. WESTON

University of Illinois

Investment Portfolio Management in the Commercial Bank. By ROGER A. LYON. New Brunswick: Rutgers University Press, 1960. Pp. xiv, 210. \$4.50.

Lyon attempts to delineate the type of flexible investment policy a commercial bank should follow in a relatively free bond market. By "flexible," he means that maturities should be lengthened and the quality reduced as interest rates rise, and vice versa when yields decline. He argues that such a policy is preferable to either the random selection of maturities and risks or the maintenance of a given structure of maturities and qualities (although maturities are systematically spaced and only the highest grade issues are held). A flexible (optimum) policy would meet the bank's liquidity needs and maximize investment income, consistent with the amount of capital owned.

Lyon's success is uneven. In Chapter 1, he shows succinctly that the bank's investments represent primarily the employment of funds remaining after the provision of adequate liquidity to support demand deposits and the extension of acceptable loans. The nature and significance of liquidity is discussed in Chapter 2, and the interrelations among liquidity, maturity and marketability of an asset are examined. This is perhaps the most useful exercise in the book, and the general reader could study it with profit. Chapter 3 is essentially a digression on the place of bank capital in investment decisions. The adequacy of capital is undoubtedly a paramount consideration in bank operations, but its relation to the management of the investment portfolio (as distinct from loans) is ambiguous. Lyon's review of the so-called risk ratios developed by the Federal Reserve System contributes little to clarify the link.

The discussion in Chapter 4 focuses on the importance of the yield curve and tax-exempt income to the commercial bank. Lyon attempts to show the superiority of his flexible investment policy over several alternatives. He draws heavily on both hypothetical and actual statistics (grouped in several appendices), but the outcome is disappointing. He criticizes the alternative of spaced maturities without comparing the income results of this type of portfolio policy with those of the policy which he advocates. Moreover, it is difficult to evaluate his argument supporting a flexible policy even aside from the absence of such a comparison. His analysis rests on data (in Appendix 4) showing actual net realized returns on funds (whose ownership is not indi-

cated) invested in various types of U.S. government securities over three periods of rising interest rates: March 8, 1951-June 4, 1953; June 24, 1954-November 15, 1957, and June 30, 1958-December 31, 1959. He concludes that "... in all three periods, ... net realized return ... declined as maturity was extended and net losses ... were actually showing in the longer maturities in the last period. ... The lesser income ... from ... a short position in ... a deteriorating market [was] more than warranted by the avoidance of market vulnerability ..." (pp. 79-80).

This conclusion, however, should not be readily accepted. While market vulnerability obviously increases as prices decline, it should be noted that virtually all of the bond sales listed which resulted in net capital losses occurred in the neighborhood of federal income tax dates. As Lyon himself mentions subsequently (p. 161), a bank may sell bonds quoted at a discount to offset a part of its profits on loans. Such action may be taken independently of the phase of the cycle in interest rates, so it is impossible to separate tax-induced losses from those due to involuntary sales in a deteriorating market. Consequently, the performance of Lyon's flexible portfolio policy remains to be tested. On the other hand, his emphasis on the importance of the yield curve in portfolio management is well placed; this is also true of his advice to banks with small incomes (subject to the 30 per cent federal corporate income tax rate) to avoid excessive holdings of high-priced tax-exempt securities.

Chapter 5 is the weakest in the book. It is simply a review of monetary and debt management policies since 1951, although the author set out to demonstrate the influence of such policies on portfolio composition. Given his strategic position in the investment department of the Chase Manhattan Bank in New York, he could have greatly illuminated the behavior of commercial banks if he had drawn on his experience (though not necessarily by describing the actual behavior of his own institution) to relate these general market developments to patterns of portfolio shifts of which he undoubtedly has considerable knowledge.

Finally, after briefly describing the types of financial assets available to meet the quality and maturity requirements specified in preceding chapters, Lyon uses most of Chapter 6 to show how a flexible portfolio policy should be executed during periods of fluctuating business activity similar to those experienced between 1951 and 1959. His central argument seems intuitively correct, but as already mentioned he fails to support it with the evidence presented.

Despite the limitations of the study when judged by the standards of professional economic research, the author has contributed a useful introduction to portfolio management in the commercial bank. The brief glossary of money-market language should be especially helpful. But for the informed reader, the book falls far short of being a supplement to the widely-used *The Management of Bank Funds* which Roland Robinson published ten years ago.

ANDREW F. BRIMMER

University of Pennsylvania

Money and Banking. By C. LOWELL HARRISS. Boston: Allyn and Bacon, 1961. Pp. xiii, 556. \$7.50.

This text is intended for a basic, one-semester, course in money and banking. It deals with "... practice, theory, and policy ..." (p. vii). Its twenty-five chapters are divided into five parts: Money; Commercial Banking; Monetary Theory; International Financial Relations; and Monetary Policy. In addition, Appendix A covers "Monetary Development: Highlights in United States Experience" in 22 pages, and Appendix B treats "Index Numbers" in 5 pages. A brief, 4-page bibliography completes the work.

One feature of this book may appeal to some teachers: it relegates to an appendix all but the most recent U.S. monetary and banking history. Its treatment here is of the "highlight" variety. Teachers who find the perspective of history useful in explaining existing institutions will need more material than that included here.

The introduction of the subject of the multiple expansion of bank credit in the second chapter confronts the students early in the course with the unique feature of commercial banking. Unfortunately most of the material in Chapters 3 through 12 fails to carry the reader on to an understanding of the economic implications of money creation. Rather, an array of operating information is presented, more than is necessary to an understanding of the economic processes but not enough to serve as a manual for management. Much of the material is loosely hung together. The treatment of bank failures, for example, recognizes the existence of the F.D.I.C. almost as an afterthought.

The theory and policy sections of the book reveal certain predilections. The quantity approach to the theory of money is more appealing to the author than the income-expenditure approach. Thus: "Sometimes the old takes on new interest, not because of the fickleness of fashion but because the old seems to have merits not found in younger rivals" (p. 215). This introduction to the quantity theory discussion is in contrast to the following found at the beginning of the chapters dealing with the national income approach: "The dust stirred up by the controversy [over Keynes' approach] has not all settled. It still clouds some views" (p. 271). Apparently the "cloud" which catches the author's eye the most relates to the consumption function. Thus: "The consumption function is more complex than Keynes realized" (p. 279), and: "The consumption function varies considerably more than Keynes believed probable" (p. 281). Later on, the discussion of the multiplier is summarily dropped because "what actually happens" is hard to measure. This reviewer thinks that beginning students can and should be fed better fare than the details of Keynes' shortcomings.

The discussion of the objectives of monetary policy, like many other sections of the book, is clouded with doubt and hesitation because of the unmeasurables and imponderables of economic life. Harriss thinks that the difficulties in defining unemployment of manpower must lead to paralyzing doubt as to proper policy (p. 399). However, in a positive vein he asserts that "... there is more undesired idleness of nonhuman productive capacity than

is consistent with public welfare." How to measure such idleness and how to reduce it are not made clear.

The author is not quite sure what the central banker should or can do. Harriss is convinced that the banker must be a man with "deep knowledge, broad acquaintance with the economy, and mature judgment," all acquired before becoming a central banker (p. 442). If he then consults with the right people and resists public pressures he will be in a position to act. The author apparently would want him to rely on his "mature judgment" rather than on any guidelines to be found in this text.

Fiscal policy is introduced on a more positive note than that with which monetary policy is dropped. The end of the chapter, however, finds a page of questions and doubts: "... there is little consensus on the fiscal changes which would best serve long-run needs. Among the biggest doubts are those about the power of monetary policy" (p. 478).

All who are competent to teach money and banking would agree that the issues in the field are not clearly defined and that proper monetary policy cannot be discovered by merely reading the right book. Yet, there is much doctrine on which there is general agreement. The implications of conflicting theories can be presented with recognition of differences in their underlying assumptions. The analytical processes for evaluating the unknown areas can be explained to students. The author of this text apparently desires to teach the students what is not known rather than what is known.

ERIC W. LAWSON

Syracuse University

Public Finance; Fiscal Policy

Development from Below: Local Government and Finance in Developing Countries of the Commonwealth. By URSULA K. HICKS. New York and London: Oxford University Press, 1960. Pp. xiii, 549. \$5.60.

The potentialities of "development from below"—a clarion phrase coined by Prime Minister Nehru—are too often slighted in the literature of economic development. As a consequence, economists are not at all equipped to resist a natural tendency in many countries to assign a disproportionate share of development efforts to general policies and large undertakings, which of necessity must be centrally directed. The inclusion of many small projects carried out by local governments, especially those in a rural setting, has definite advantages: such projects can often bring quick results and can be financed out of revenue sources difficult for central administrations to tap. Moreover, a democratic system of local government has long been regarded, and appropriately so, as an effective way of promoting a country's political development. For these different reasons, therefore, this new contribution by Mrs. Hicks, in a field which few other economists are particularly qualified to investigate, fills an important need.

The book's success is partly due to the fact, as Mrs. Hicks explains, that it is in a very real sense a cooperative product, in which her collaborators were local government finance officers from British overseas territories who

came to Oxford for advanced training. Even more important, however, is that her own detailed knowledge of local government in the United Kingdom and overseas enabled her to amplify and interpret the practical experience of these officers. The result is an exciting story of the building-up of local governments in the former colonial territories as a preparation for their independence. The story's full significance is enhanced by Mrs. Hicks' detailed descriptions of British local institutions and how they were emulated in some of the overseas territories.

The book starts by describing the new policy communicated to African governors in 1947 by the Secretary of State for the Colonies. Thereafter, efficient local government was to be encouraged not only as a means to political development but also for its important contribution to social and economic advancement. The next chapters present a preliminary survey of local government institutions in the different territories and an explanation of the subtle combination of local responsibility and central control in the system of local government in the United Kingdom. Next come a series of chapters on the detailed history of local government institutions in the West Indies, India, Ceylon, and various territories in East and West Africa. One of the conclusions of this historical review is that the emergence or prospect of political independence does not substantially alter the course that had been set by the British administrators for the development of representative and responsible local government institutions. Also, the new governments continue to regard the strengthening of local government finance as essential.

The main body of the book is devoted to a comparative examination of local authorities' financial accounts, which comprise the best source of information on what the authorities actually do. This examination, which is supplemented by frequent glances at relevant experience in the United Kingdom, covers current expenditures, for which a simple functional breakdown is used, the sources of current revenue, with separate attention to rural and urban areas, the capital account, and grants from central governments for current and capital purposes. The book's concluding section considers general problems of central-local relationships—financial, administrative, and political—and the more specialized problems of rural and urban governments.

Though rich in factual detail and a substantial contribution on that score alone, the book is also of value for its carefully reasoned conclusions on some perennial policy questions. With respect to the most appropriate basis for a local tax on urban realty, Mrs. Hicks stresses the advantages of capital value over annual value, particularly in a developing country. Under rural conditions, however, she eschews a tax based on land value in favor of a personal tax assessed presumptively according to the individual's or family's potential net income. In her examination of grants-in-aid, which she expects will grow in importance, Mrs. Hicks raises objections to the aim of interlocal income redistribution in the developing countries, partly on the ground that development opportunities are more likely to present themselves in the richer than in the poorer areas. She endorses both block grants and specific grants, provided they are fitted into a coherent plan. Throughout these policy-oriented discussions Mrs. Hicks skillfully applies the economist's viewpoint

to the complex problems of infant local governments in different institutional settings without, however, shortchanging the political and administrative aspects.

HASKELL P. WALD

Federal Reserve Bank of New York

Federal Tax Reform. By DAN THROOP SMITH. New York: McGraw-Hill Book Co., 1961. Pp. v, 328. \$7.00.

Highly significant issues involved in federal tax policy are treated in this volume. The current revenue structure is subjected to detailed analysis in a manner largely nontechnical in nature. Many recommendations for changes in the tax system are presented. These are based on the assumption that a general tax reduction is not in the offing. The suggested alterations are designed, therefore, to be "substantially self-financing" and are not proposed as means of lessening over-all tax burdens.

Only a painstaking student of taxation, steeped in both the theory and practice of government finance, could have written this volume. The author has drawn a concise word-picture of today's federal tax system, and has placed emphasis on its most vulnerable points. He has assembled a vast amount of factual information for use as background material in making policy recommendations. This has been accomplished in an orderly fashion and in a way which facilitates understanding. The common danger of becoming confused, or totally lost, as one seeks to work his way through a maze of items pertaining to federal taxation has been minimized in this study by a judicious selection of features of the tax system to be treated.

The book is devoted principally to an analysis of major federal taxes and means of improving them. An interesting introductory chapter contains a discussion of the nature of taxation and objectives of tax policy. Here the author comments on ability-to-pay, benefits-received, and sacrifice theories; on proportional and progressive tax rates; on compensatory fiscal policy; and on the mature-economy thesis as it bears on tax reform. He takes the position that the existing federal tax structure does not rate well when viewed in the light of acceptable principles; that serious and lasting damage to public morale and to prospective economic growth is likely if changes in the system are not soon forthcoming; and that taxes must be made fairer, simpler, and less repressive than they are today. Extensive reform of each major segment of the tax system is recommended, with special attention given to (1) the individual income tax, (2) depreciation, (3) capital gains and losses, (4) the corporation income tax, (5) trusts and estates, and (6) excise taxes. It is worthy of note that the recommendations do not include proposals for new taxes, unless the suggestion to substitute a single broad-based excise at the manufacturer or wholesaler level for present selective excises can be regarded as a new fiscal device.

A book on tax reform should be specific, and this one meets the requirements in this regard. In connection with the personal income tax, for example, rates, exemptions, deductions, annuities, deferred-compensation contracts, gifts, and many other issues are scrutinized with care. A broader tax base is recom-

mended. Sensible proposals for changes in methods of taxing capital gains are made and more realistic allowances for depreciation are urged. In the author's opinion, it is very important to have the depreciation provisions of the revenue code revamped at an early date.

In the treatment of the corporate income tax, some attention is directed to shifting and incidence, but no position is taken in regard to the controversy concerning the final resting place of the burden of this revenue measure. The author concludes, however, that: "Regardless of its incidence, the results of the corporation income tax are undesirable" (p. 191). If it is not shifted, it discourages savings and capital formation and stifles economics growth. If it is shifted forward to consumers, it becomes a capricious excise tax, placing burdens on buyers of goods and services in uncertain and indeterminate ways. But the corporate income tax cannot be eliminated, which makes its reform imperative. The corporate normal tax rate could be slightly reduced, it is argued, if the law were to be tightened to prevent abuses. Cooperatives should be taxed on their net retained earnings and tax benefits now accruing to cooperative financial institutions should be eliminated in the interests of justice. Provisions for depletion allowances should be revised at an early date.

In the judgment of this reviewer, insufficient attention is given in the study to possible reform measures within the area of excises. The problems inherent in consumption taxation as a means of financing government, particularly at the federal level, are treated in sketchy fashion. Fewer pages in this important work on tax reform are devoted to excises, for example, than to such topics as the taxation of estates, trusts, and foreign income. The substitution of a broad-coverage tax for selected excises, as proposed, might constitute a step toward a rapid expansion of consumption taxes. For this reason, the proposition warrants more critical treatment than it receives in these pages.

As a guide to possible changes in the federal tax structure, this book deserves a high rating. Perhaps it would have been more interesting to some readers, and more enlightening, if theoretical and philosophical aspects of taxation had been emphasized to a greater degree and less attention had been directed to certain administrative details. But the study is intended to be a treatise on tax reform rather than on tax theory. It is clearly entitled to a place of prominence in the literature on reform.

C. WARD MACY

University of Oregon

Die direkten Steuern der Kapitalgesellschaften und die Probleme der Steueranpassung in den sechs Staaten der europäischen Wirtschaftsgemeinschaft. By ALBERT J. RÄDLER. Amsterdam: Internationales Steuerdokumentationsbureau, 1960. Pp. 285. \$8.00.

There can be no doubt that the economic integration of Europe presupposes coordination in the tax field. Actually, this point has been sometimes overstressed. It would seem presumptuous to require unification. Mainly those differences in tax institutions that obstruct free competition should be removed; or, to employ the usual term, European tax systems should be "harmonized."

People concerned with those plans will welcome the present volume, sponsored by the Council of Europe and prepared under the supervision of Professor Ottmar Bühler of the University of Munich. They should realize, however, that it covers only one-half, if not less, of the subject. It explores possibilities of mutual adjustment of direct taxes on corporations imposed by the six member states of the European Economic Community. Therefore, as Bühler announces, a companion volume is contemplated dealing with harmonization of so-called capital transfer taxes, sales taxes and turnover taxes.

The complexity of the problems encountered by Rädler justifies a step-by-step procedure. He begins with the present structure of taxes on corporations in the six member states (Part I) and, in the following Part II, embarks on a comparative study of basic provisions of those tax laws. He then turns to the tax provisions in the international treaties that gave rise to the Benelux Customs Union, the Coal and Iron Community, and the EEC (Part III). Furthermore, he evaluates arguments in support of the plans in the light of international tax law (Part IV). Finally, he lists his conclusions and recommendations, though in too sketchy a fashion to be used as a summary (Part V).

Generally, the vast and somewhat amorphous material has been carefully handled. The author displays a flair for essentials and presents his views with succinctness and clarity. Still the wisdom of some of his points may be doubted. The author, for instance, chooses to define "double taxation" in a narrow sense. Following him, the concept should cover only those cases in which several fiscal authorities impose taxes either on the same object or the same base of taxation. Other cases of overlapping, however, should deserve a special name. If the same fiscal authority taxes the same object twice, Rädler speaks of a "double tax burden" (*Doppelbelastung*) though this concept presupposes an agreement on the final resting place of the tax. As precarious is the author's suggestion to reserve the concept of income for the earnings of an individual. Legal entities, he contends, do not earn any income. Therefore taxes on corporations are imposed either on their yield (*Ertrag*) or on profit.

Evidently, scope and methods of "harmonization" largely depend on tax shifting. In this area, however, the analysis is poor both from a theoretical and a practical angle. Obviously, the author is more concerned with the legitimacy and desirability of shifting than with intricacies of its economic process. Finally, he lapses into the old prejudice that shiftability depends primarily upon the character of a tax. In this context, at least, the distinction between *Kostensteuern* and *Gewinnsteuern* is as spurious as the Physiocratic dichotomy of "direct" and "indirect" taxes that engendered the prejudice.

FRITZ KARL MANN

The American University

International Economics

Import Liberalization and Employment. By WALTER S. SALANT and BEATRICE N. VACCARA. Washington, D.C.: The Brookings Institution, 1961. Pp. xix, 388. \$6.75.

Until recently, the claims and counterclaims concerning the effect of im-

port liberalization on domestic employment were devoid of any empirical content. It is the main purpose of the research reported in this volume (parts of which were presented earlier in professional journals) to fill this gap. For each of 72 selected industries the authors estimate the following effects of \$1 million increase in imports: (a) the direct impact on employment in the selected industry; (b) the indirect effect on employment in all other industries, traced through interindustry relations data; (c) the effect of liberalization on employment in industries connected with the process of importation, such as ocean freight and insurance; and (d) the direct and indirect effect of higher foreign incomes and dollar earnings on U.S. exports and employment. Items (a) and (b) are usually negative while (c) and (d) are positive. The four components are then combined to obtain the net short-run employment effect of trade liberalization in each industry.

How were the industries chosen? Since the 200-industry division of the economy is the smallest unit for which input-output data are available, the individual commodities in the tariff classification had to be classified into these industries. As a first step they were classified into the 551 subindustries of the four-digit SIC. Of these, 168 subindustries were selected which included commodities with significant protection and for which reliable output and employment estimates could be prepared. These subindustries belonged to 89 industries. But 17 of the latter were rejected because the industry's buying and selling relations could not be assumed to represent those of the commodities involved. For each of the remaining 72 industries an estimate was made of the effect of a \$1 million decrease in output, based on the average employment-output relationship for the industry in 1953. Thus instead of estimating the general effect of a particular liberalization program, the book deals with individual protected industries (on the assumption that a given increase in imports would cause equivalent displacement of domestic production). This procedure enhances the value of the estimates as they can subsequently be applied to any specific liberalization program.

Of the 72 industries the net decrease in employment is largest for liberalization in the case of apparel where the decrease is 175 employees, and smallest for grain mill products where there is a net increase of 5. The median net decrease is 86 employees, while the third quartile is 104. A summary of the main findings is given in Table 10.1, p. 215.

These figures must be regarded as upper limits for two reasons. First, some of the assumptions made, like the "equivalent displacement" assumption mentioned above, lead to an overstatement of the employment effect of trade liberalization. Second, the authors' attempt to examine the current validity of the estimates which are based on 1953 data, leads them to conclude that "in most cases studied liberalization undertaken in 1960 would cause smaller . . . effects on employment . . . than is indicated by the estimates of this study" (p. 236). Treated as maximum figures, the employment effects developed in this study appear almost insignificant in comparison with: (a) cyclical changes in employment, (b) employment implications of economic growth, and (c) normal turnover in the labor force (Ch. 12).

The findings rest on a large number of assumptions, the rationale for which

is clearly given at every stage of the analysis. Indeed 4 out of the 12 chapters, and 2 out of the 7 appendices are devoted to "methods and assumptions." The 40 text and appendix tables contain a wealth of statistical information. Finally, 2 chapters are concerned with the general implications of the findings.

Since the findings have a direct bearing on policy matters, it is an important feature of this pioneering work that much of it can be readily understood by the layman. Yet the analysis loses none of the rigor and precision of a professional volume. Except for an occasional tedious paragraph (such as a twelve-line sentence on p. 176) the book is well written. It would be well for one of the public organizations concerned with economic policy to print and distribute among policy and law makers a condensed version of its principal findings and their significance.

MORDECHAI E. KREININ

Michigan State University

Los pagos internacionales y la política monetaria. By ARTHUR W. MARGET and ROBERT TRIFFIN. Mexico: Centro de Estudios Monetarios Latino-americanos, 1959. Pp. 175. 25 pesos.

This book presents a series of eight lectures on International Payments and Monetary Policy by two U.S. economists, both of whom are authorities in that field and have been in government service. These papers were delivered at the annual conference of the Program of Technical Education convened by the Center of Latin American Monetary Studies (CEMLA) of Mexico in 1956.

Convertibility, the experiences of West European countries, and the essential aspects of the framework of international payments are examined and analyzed, with a view to the application of adequate fiscal and monetary policies in promoting and directing the financial and economic development of the various countries of Latin America. Arthur W. Marget of the Board of Governors of the Federal Reserve System has three papers in this book on Latin America and Convertibility. He relates his treatment of convertibility to the problems of development in the countries of Latin America. Robert Triffin of Yale University, in four papers, discusses the various monetary policies in the postwar period which led to the world dollar shortage, and points out the importance of his observations for the countries of Latin America.

The timeliness and significance of these studies have impelled the Executive Council of CEMLA to have the papers of the conference published, "to fulfill one of its essential objectives: the diffusion of ideas among the Latin American public interested in the study of the most important economic and financial problems in the modern world" and thereby help in furthering the amelioration of the Latin American economy.

Faced with an urgency for economic development and the application of practical monetary policies, Latin Americans are told by Marget in the first lecture that convertibility should be of primary concern to them. He demonstrates the aim of economic policy in developed as well as in underdeveloped lands to be the continued raising of the living standards of the masses. Coun-

tries that have traveled along the road of convertibility have reached the main highway of economic progress bringing improved living conditions to greater numbers of their population. That multilateral trade has its advantages over bilateral trade and how its contributions favor the well-being of the people is explained. Convertibility is possible for these countries and it is desirable to adopt adequate fiscal and monetary policies such as will lead them to this goal.

In the second lecture, Marget shows how European countries have arrived at convertibility through following appropriate internal monetary policies and how Latin American countries could profit from this experience. The risks inherent in such policies are exaggerated by the enemies of convertibility. He invites Latin American countries to examine the possibilities of application of such a policy to the task of economic rehabilitation. In the third lecture, he dwells in greater detail upon the possibilities of applying this European experience and the relationship between monetary policies and convertibility. The widening of the zone of convertible currencies promotes international investment of capital. All countries, great and small, possessing economic understanding and responsibility coupled with political resolution, can raise the economic standards of their population. The author sees Latin America approaching this end through international economic cooperation.

For the first paper Triffin used the material he incorporated into the first chapter of his book, *Europe and the Money Muddle* (New Haven 1957) which was published a year after his CEMLA lecture. He takes some economists to task for creating new theories to explain temporary economic situations. This paper is devoted to an examination and analysis of the world dollar shortage, its history, conflicting theories, and U.S. and foreign policies. The mechanism of the balance of payments and types of exchange is the subject of Triffin's second paper. He explains how the growth of production and the capacity to export of foreign countries has led to an increase in U.S. imports. Other countries in turn were favorably affected by this greater economic activity. U.S. capital investment accelerated foreign economic development.

The third chapter by this author is called "National and International Monetary Policy during the Century." The policies making for monetary equilibrium are touched upon, and regional and international coordination are brought into focus. The convenience of multilateral agreements is developed. The fourth paper by Triffin originally appeared in the Swiss journal *Kyklos* (1958, 11, 405-18) as a review of the book, *The World Dollar Problem*, by Donald MacDougall (London 1957). Triffin states that the great expansion in the use of international facilities for credit, such as that available through the International Monetary Fund and the European Payments Union has been most fruitful in promoting international convertibility.

Those of us who have been following Latin American developments have seen some of the recommendations in this book actually being implemented on a continental as well as regional basis. The Inter-American Development Bank and the Central American Economic Integration Bank have both been organized to promote economic growth within Latin America. Governments

and central banks in Latin America are applying orthodox monetary and fiscal policies. President Kennedy's *Alianza Para Progreso* is another manifestation of the new climate for economic advance in all the countries of Latin America.

OSCAR HERSCHMAN

New York, N.Y.

Europe at Sixes and Sevens—The Common Market, the Free Trade Association and the United States. By EMILE BENOIT. New York: Columbia University Press, 1961. Pp. xxi, 275. \$5.00.

This book tackles a considerable task. It gives some analysis, some description and some views regarding a wide range of current international economic problems. It describes the European Common Market, the associated communities, and the European Free Trade Association both in institutional terms and by reference to economic magnitudes, and analyzes the difficulties which have occurred in developments to date. The author then proceeds to a lengthy discussion of U.S. balance-of-payments problems, particularly the question of the competitive position of U.S. exports in European and overseas markets and the prospects for U.S. investment inside of the Common Market. There is a concluding chapter on the political and philosophical aspects of European integration and its effects on the United States and underdeveloped countries.

A book such as this has both advantages and disadvantages. At times, particularly when discussing U.S. investment in Europe, it reads like a handbook for U.S. businessmen, and it no doubt collects together useful information not easily available elsewhere. Moreover, it states a number of positions, e.g., the wastefulness of less than full employment in the United States, the harmful political effects of slow growth rates in the western world, and the overwhelming effects of deteriorating terms of trade on underdeveloped countries during the last few years which, I would guess, most economists would agree need constant repetition. On the other hand, the book is already dated, as is inevitable in an area where changes are occurring rapidly and where the United Kingdom has finally made a quite abrupt change in policy by applying for membership in the Common Market. Also on the negative side, the author has a number of judgments—e.g., when referring to European integration he says: "This is, after all, the first significant western innovation in statecraft since the nineteenth century unification of Germany and Italy"—which seem, at the least, to require considerably more justification than they receive.

The book is most useful when it is focusing attention on current problems. The U.S. balance-of-payments problem poses policy questions which are difficult to answer. Certainly the facile solution of reducing government expenditures abroad does not seem meritorious. To exhort U.S. business to be more competitive or to urge a slower rate of increase in costs does not seem likely to be very effective. Benoit, while arguing that the effects of the Common Market on U.S. exports can easily be overestimated, devotes considerable space to the advantages of investing in western Europe to take advantage of the markets created by the free trade area. Much of this is based upon his very useful analysis of the deteriorating competitive position of U.S. exports

of manufactures. Perhaps foreign investment to build up an inflow of investment servicing is the fundamental solution of the U.S. balance of payments in the long run. Certainly manipulation of interest rates, deflationary policies, or changes in the value of the U.S. dollar seem to have few attractions. The payments crisis of the last quarter of 1960 has apparently had little impact on U.S. policy unless significance is attached to the reduction of duty-free allowances for returning tourists and some tightening up on U.S. procurement abroad, especially by the armed forces.

Benoit is obviously an enthusiast regarding the Common Market. Much of this enthusiasm is based on the political consideration that the western world must become stronger and more united and that economic integration in western Europe is a first step in this direction. A good deal of it is based, however, on the rapid growth in France, Germany and Italy during the last few years, and the hope that integration and faster growth rates will produce fundamental changes in the economic environment which will leave more room for individual enterprise and mobility among social classes. With the United Kingdom now applying for membership, it can only be hoped that Benoit is right and that the removal of internal barriers to trade will stimulate growth and reduce social and economic rigidities. If this should occur at the same time that full employment was achieved in the United States, the western world could at least argue that it was providing a reasonable environment to encourage the growth of underdeveloped countries.

W. JOHN R. WOODLEY

Caracas, Venezuela

Business Organization; Managerial Economics; Marketing; Accounting

Direct Costing und Programmplanung. By HANS-HERMANN BÖHM and FRIEDRICH WILLE. Munich: Verlag Moderne Industrie, 1960. Pp. 141. DM 16.80.

This booklet, by and for practitioners of cost accounting (and accordingly almost wholly unencumbered by a scholarly footnote apparatus), attacks the perennial problem of appropriate overhead apportionment in industrial enterprises.

First, the rationale—or the lack thereof—of full-cost apportionments is dealt with cogently. Second, the authors argue very ably in favor of *Standardgrenzkosten* as the (locally defined!) costing criterion, i.e., marginal costs in the output interval in which these are “theoretically and practically” constant. Their argument, in language that cost accountants understand, is no doubt most heartening to those who have wisely retained and defended their marginalist convictions against the recurrent Hall-Hitch heresy. But then, third, the direct costing or *Standardgrenzkosten* criterion has limitations, too, and Böhm and Wille point them out in detail. Roughly speaking, these limitations appear whenever one bounces against capacity ceilings. The appraisal of marginal *utilities* then becomes more important than that of marginal costs. This is where mathematical programming, linear and nonlinear, comes in.

Unfortunately, such techniques are dealt with rather sketchily; we are referred to the literature.

The authors' three-stage development is headed in a direction that economists must warmly applaud. The total effect is perhaps strengthened rather than weakened by the authors' exclusive, and somewhat prolix, use of German cost-accounting parlance when, with a little symbolism, the material could easily have been compressed to journal-article length.

While endorsing and liking the whole, one could naturally find fault with details. For one thing, it would appear in the light of, say, Meyer and Kraft's work (*Am. Econ. Rev.*, May 1961, pp. 313-34) that the authors do not do full justice to the possibilities of statistical costing techniques (pp. 25-26). For another, the enjoyable fairness with which they compare different costing procedures is slightly marred by insufficient emphasis on the fact that different criteria entail different informational requirements. On pages 56 to 59, Böhm and Wille come close to echoing Chamberlin's argument (*Econ. Jour.*, June 1952, pp. 318-25) to the effect that "the full cost principle [is] one phase—and I think a very important one—of monopolistic competition theory," viz., that the principle may be advocated for lack of strategic information.

Needless to say, pricing by mathematical programming cannot be shielded from the informational facts of life, either. This circumstance perhaps goes a long way toward explaining why, at the last annual meeting of our Association, the pertinent contributions were still entirely about the controversy over full-cost versus marginal-cost pricing—and marked by the absence of even ceremonial references to mathematical programming.

EBERHARD M. FELS

University of Pittsburgh

Managerial and Industrial Economics. By JOHN A. SHUBIN. New York: Ronald Press, 1961. Pp. vii, 518. \$7.50.

This textbook is divided into four main parts: economic development, the industry, the firm, and forecasting and long-term business planning. The author does his best writing in the first part (two chapters), where he presents a clear, concise, facile background of the elements and processes of economic growth and structural change.

In Part II the author begins to get wordy and to lose the thread of his basic four-part organizational structure. Chapter 4 begins and ends well, but the bulk of the chapter is given to extended excursions into matters dealing with the *firm*. The material includes short-run cost determinants, break-even analysis, optimum size plant, optimum output, joint products and joint costs. In the course of the presentation, the author constantly shifts his base from industry to firm and back again, often with no transition or tie-in. It would be reasonable, of course, to combine both industry and firm analysis under specific topical headings, but this is inconsistent with the author's basic structure of the book. Because of this organizational weakness, there is considerable unnecessary repetition throughout the work, while the coverage at any one point frequently is inadequate or incomplete.

One gains from Chapter 4 the impression that it may have been done hurriedly—e.g., “Most industries adjust the rate of output . . .” (p. 155). It is of course the *firm* that adjusts its rate of output, not the industry—barring collusion, which is not mentioned. In this same chapter, the author discusses “decentralized managerial organization,” the functions of operating managers as compared with those of top executives, and economies of scale for the firm through the use of managerial and business specialists. All of this is done under the general heading of the *industry*, but distinctly from the viewpoint of the *firm*.

The 80-page fourth chapter also includes discussion of industry growth trends and the rationalization of industry. This is well done, but because of the jumbled organization of the chapter it appears to be peripheral rather than preferably central to a discussion of the industry.

Chapter 5 provides a good, standard treatment of the various types and degrees of competition. One might suppose that the student should have had this exposure in an earlier principles course. Following this, the author again digresses on pricing policies of the firm while still purportedly concentrating on the industry.

The firm comes into its own in Part III, where the author does a considerably better job of making his content conform to the part heading. However, the purpose of his earlier diversions becomes even more difficult to understand when one encounters (on p. 244): “Since the firm is a producing unit in an industry, the economic analysis of business enterprise is an extension of the study of an industry.” This may be true, but in his previous handling of “an industry” the author so markedly emphasized the firm that there is really no evident transition or extension from the general to the specific. Rather, there is a disjointed continuum from the specific to more of the same.

The discussion in Chapter 7 of scale economies in multiplant integration is a good, tight piece of work. The presentation of break-even analysis in this chapter is far better than the earlier one in Chapter 4, where, for instance, in one chart (p. 142) a supplemental profit-loss curve is inaccurately derived from the total cost-total revenue curves.

Part IV opens with a very adequate highlighting of elements in the business environment (risk and uncertainty, labor unions, taxation, etc.). However, in Chapter 10 the author again evidences confusion in the organization of his content by slipping into short-term analysis which might better have been in or adjacent to Chapter 8. Moreover, references to short-term forecasting of government expenditures and of personal consumption expenditures are not tied in with how or why these projections would be of use to economists or managers.

It is disappointing to discover in Chapter 11 that the discussion of the “process of long-range planning and decision making” is cut short even before the author covers all of the steps that he has enumerated. This is the point at which “managerial and industrial economics” might have been brought into sharp focus. It isn’t.

The final chapter is even more disappointing, for it deals primarily with management strategy and processes rather than with applications of economic

analysis, despite the chapter title of "Long-Range Program and Policies." The coverage here is very similar in content and level to that found in many introductory management textbooks. Even if the author considered this material vital to his total presentation, it appears misplaced as the concluding chapter in a text on managerial and industrial *economics*.

From the preface one would conclude that this book is intended to prepare an executive manager or an economic analyst to conduct "an economic analysis of an industry and a firm." It falls short of this goal partly because the organization of content is difficult to reconcile systematically, and partly because the author is inclined to make sequential statements which are generally quite correct but which more often than not omit the "why" that an avowedly analytical approach ought to include.

DONALD J. HART

University of Florida

Industrial Organization; Government and Business; Industry Studies

Ownership, Control and Success of Large Companies: An Analysis of English Industrial Structure and Policy, 1936-1951. By P. SARGANT FLORENCE. Chicago: Quadrangle Books; London: Sweet & Maxwell Ltd., 1961. Pp. xiv, 279. \$12.50.

This study of modern English joint stock companies is similar to the 1932 survey of U.S. corporations by Berle and Means. There are, however, important differences. Professor Florence's report is less legalistic and theoretical, more statistical and institutional. It puts less emphasis upon the statement of conclusions, more upon the evidence and the processes by which they were reached. Its tone is less incisive but more objective.

The 1,700 companies represented in Florence's research account for 40 per cent of the business done by all English firms in private enterprise. In addition, he argues, it is in the public interest to measure large companies' (a) control concentration because such companies may be the means of monopolizing industry, (b) earnings retention because their saving is the main source of private capital formation, and (c) investment success because, under continuing inflation, investment in their shares is one of few remaining means of *real* security open to the ordinary citizen.

This line of reasoning is clear enough, but his approach to the measurement of some of these things is not the most direct or enlightening. The limitations of his survey were largely inherent in the data available to him. He selected, as subjects for his inquiry, those joint stock companies registered in the commercial and industrial sections of the English Company Registry Office which had issued share capital of £200,000 in 1951. Nationalized industries (domestic transportation, communication, public utilities, coal mining, iron and steel) were of course disregarded. Omission of certain other industrial categories (e.g., sea transport, finance, insurance), however, left a noticeable gap which is not so easily justified.

Collection of data was completed in 1954 and a decision taken to begin

the study with 1936 because data for earlier years were inadequate, and to end it with 1951 because share prices in that year were in about the same phase of the cycle as they had been in 1936. The companies were classified into three groups according to size of issued share capital. All 98 companies in the largest size group were subjected to complete analysis; the other groups were sampled and the companies in the samples subjected to partial analysis.

The variety of means and circumstances tending to concentrate control—gearing (i.e., leverage) in the capitalization, concentration of personal ownership of voting shares, shareholding by institutional investors and holding companies, interlocking of directors and of large shareholders—is of course considerable. Their measurement and interpretation are too complex for description in a brief review, but certain key conclusions require mention. Concentration of control was found to be greatest among the largest companies, but during the 15-year period it tended to decrease among growing companies. It was greatest in the distributive trades, food, and brewing; least in textiles, chemicals, and paper, the last two having undergone a sharp reduction during the period.

Earnings retention was measured by reference to the dividend pay-out ratio which averaged about 40 per cent for all companies, with lower ratios in industries—especially in the largest companies—where vote concentration was low. Investment success was measured by dividend gain (ratio of dividends during the period to 1936 market value) and capital gain (ratio of market value increase to market value in 1936), the former averaging 100 per cent and the latter 80 per cent, with a high correlation between the two, not only for industry and size groups but even for individual companies. Total gain showed a high inverse correlation with size of company and a high direct correlation with risk as measured by annual variation.

Florence's survey is unquestionably an important contribution to the stock of knowledge about business organization. Although his approach is more indirect than one might wish and many of his conclusions are qualified almost to the point of obscurity, students of corporate evolution will find, upon close reading, that he does shed significant light upon an area which hitherto has been but poorly illuminated.

ROBERT W. MAYER

University of Illinois

Land Economics; Agricultural Economics; Economic Geography; Housing

Energy in the American Economy 1850-1975: Its History and Prospects.

By SAM H. SCHURR and BRUCE C. NETSCHERT with VERA F. ELIASBERG, JOSEPH LERNER, and HANS H. LANDSBERG. Baltimore: The Johns Hopkins Press, for Resources for the Future, Inc., 1960. Pp. xxii, 774. \$12.50.

This comprehensive study probably comes as close to a definitive work as is possible in a field of resource utilization that is so subject to change in techniques and where information on reserves and future practices is at best partially incomplete. The review of past energy consumption in the United

States is cast in terms of the major sources, fuel wood, coal, oil, and natural gas, while future energy demand is projected in the expected changes in the use of coal, oil, natural gas, and electricity. (The role of atomic energy is expected to be unimportant for a period of time well beyond the study's projections.) The projections of future energy use do not rely solely upon extending the past rate of consumption for various resources, however, but embody an assessment of the likelihood of modifications in resource supply and technology. Although some may quibble with the authors' appraisal of the developments in energy utilization that are expected to cause shifts in the pattern of resource use, the study sets forth clearly the judgments upon which the predictions rest. The recognition of the probable changing future pattern of energy utilization and the attempt to describe its course represent significant contributions of this study.

In estimating the energy requirements for the future, more than aggregate trends are compiled. The major energy-using sectors of the economy—industry, commerce, household, transportation, government, and agriculture—provide the frame of reference for the determination of future United States requirements. The use of the sectoral approach lends itself to the treatment of many topics in addition to the usual statistical materials—such as reserve conditions, expected technological developments, cost-price relationships, and a wide variety of technical features of energy use. As a result, the book provides both a forecast of future energy demand and supply and a host of information on economic and technical aspects of energy use. The extensive index together with the large number of tables and charts—120 tables and 73 charts—greatly facilitate the study's use as a reference work.

The authors' broad conclusions furnish little comfort to the neo-Malthusian. In spite of the increased reliance upon foreign supply for our materials requirements since the 1940's, no evidence of serious resource exhaustion or appreciable increase in cost of domestic energy production is shown by the study. Indeed, the authors suggest—but do not recommend—that the United States could meet its energy needs domestically for the next fifteen years without significant cost increase.

LAWRENCE G. HINES

Dartmouth College

Our National Park Policy: A Critical History. By JOHN ISE. Baltimore: The Johns Hopkins Press, for Resources for the Future, 1961. Pp. xiii, 701. \$10.00.

Professor Ise has written about a subject which is obviously close to his heart. His history of our national parks policy is illuminated by the intensity of his feeling as illustrated by such statements as: "Crater Lake might be thought of as the most beautiful lake in the world, for no other lake could be so beautiful." His famous wit is displayed: "Some people have argued that the planes gave a better view of the scenery than could be got from the ground, and saved time too; perhaps in the deep recesses of their minds some were moved by the common American notion that the use of planes would enable them to get past the scenery more quickly."

The book is divided into three parts. Part I traces the development of the early parks covering the period from 1872 to 1916. Part II covers the period from 1916 to 1959 and uses the various administrations of the National Park Service as the main organizational device. Part III treats some special park problems such as wildlife, national park concessions, financing the parks, wilderness areas, and national parks in other countries.

Ise is a frank and open friend of the parks. He describes with sympathy the struggles that park lovers have gone through to protect the parks from lumbermen, miners, grazing interests, reclamationists, power interests, vandals, poachers, dishonest politicians, crude sightseers, and "pure" conservationists who believe any development of natural areas is "bad." Throughout the book the heroes and the villains are clearly identified for the reader. The historical research appears thorough and the book is well documented, but this reviewer was disappointed at the superficial treatment of the conflicts arising over the disposition of park lands. The book illustrates the tensions created when public ownership is attempted in a predominantly private enterprise economy. Yet no generalizations are drawn with respect to the problems common to parks and other public goods. Application of past experience in conflict resolution to future problems will have to be supplied by the reader.

Some will be disappointed at the way Ise uses certain terms that are almost devoid of meaning unless the writer supplies a definition. A case in point is the word "conservation." To Ise a conservationist is one who protects parks. Yet this means that certain people are "conservationists" in a particular situation but are quite the reverse in another. One is led to conclude that a more operational set of principles is needed to decide on natural-resource use than "conservation."

The author's ability as an analyst comes through best in the chapters on financing the parks and wilderness areas. There is little new here, but his familiarity with the literature on the subject and his own acuteness make possible some penetrating comments. He makes suggestions as to ways the national park deficit could be reduced, and his treatment of wilderness areas is moderate and well balanced. He states the conditions under which wilderness areas will yield more utility than in other uses. One concludes that Ise is a bit more temperate when viewing possible future policies than he is when passing judgment on past actions.

EMERY N. CASTLE

Oregon State University

Labor Economics

The Steel Industry Wage Structure—A Study of the Joint Union-Management Job Evaluation Program in the Basic Steel Industry. By JACK STIEBER. Cambridge: Harvard University Press, 1959. Pp. xxiii, 380. \$8.00.

The successful operation of a collectively-bargained, industry-wide, inflexible, job-evaluation system in the oligopolistic, large, basic-steel industry is carefully described by Jack Stieber in this monograph. One unique characteris-

tic of this system is that it was relatively insulated from labor-market forces which have had their impact upon the degree of liberalism in administration of the entire structure, rather than on individual occupations. The importance of key jobs in linking plant wage structures and the labor market is therefore called into question.

The study meticulously documents the development and administrative problems faced by this program. In contrast, it depicts the efforts and failures at reaching a comparable agreement on wage incentives. The parties lacked agreement of purpose and suffered from differences within their own ranks as to procedure and goal. Concentrating as this inquiry does on the negotiations of the agreements, the attitudes of union leaders and company officials, and formal administrative problems, it should be supplemented by reports on the human behavioral aspects within the plants, particularly because the intense feelings on the subject of work rules became so critical in the 1959 strike. Is the seeming acceptance of the job-evaluation system largely the consequence of the succession of annual increases in wages and fringe benefits and adjustments in wage incentives, rather than any sanction for the program itself?

This painstaking documentation of the cautious, considered negotiations leading to the agreement on job evaluation graphically discloses the interplay of common union management purposes, the international union's political problems and concern for its institutional security and the constructive direction provided the parties by the War Labor Board and its agency, the Steel Commission. The union desired to eliminate inequities. Moreover, deep-rooted in the union outlook is the acceptance of the principle favoring a standard national occupational wage scale. Management fortunately created a base for such negotiations through its Cooperative Wage Study, which sought to rationalize rather than replace the existing wage structure. Negotiations extended over a two-year period from January 1945 and resulted in four tentative agreements before a completed plan was approved.

Besides prescribing a uniform industry job-rate structure, the plan deviated from other job-evaluation plans in that it allotted greater weight to responsibility than to skill. It has therefore survived the impact of recent technological change better than traditional plans. After acceptance by the U.S. Steel Company, it was extended by the union to most other companies in the industry. Strict administration and centralized supervision of the program by the multi-plant corporations and the continued operation of an industry clearing house, The Cooperative Wage Bureau, have tended to make for inflexible adherence to the established wage structure. Departures have been noted primarily for isolated jobs and single plant companies. Arbitrators have also upheld managements in most cases where unions have sought more liberal applications.

The negotiation of an agree-upon set of general principles for the operation of the wage incentive system proved impossible. But with the aid of the Wage Stabilization Board and arbitration decisions, the way was cleared for the replacement of "old" by "new" systems and the adjustment of rates. As a result, there has been a progressive conversion in operation since 1951 and

more jobs are covered by wage incentives. Disputes have been handled by arbitrators on an individual basis. Disgruntlement among incentive workers disappeared as few of them could complain of not sharing in the wage improvements and of finding their differentials over day-rated jobs whittled down. As these bonuses increased, the union made demands for extending incentive coverage to satisfy day workers. The dispute over principle is being submerged in the contest over the adequacy of earnings on individual jobs, a procedure which permits progressive accommodation. No answer is provided on the adequacy of this process.

The adoption of the job-evaluation program has favored the progressive elimination of the geographical differentials which became fully effective in 1954. Now one single uniform occupational base-rate structure covers the entire industry. There has been relatively general adherence to this structure. But because of the varying methods of wage payment, and variations in incentive yields for similar jobs in different plants, occupational earnings for identical jobs are not uniform. The dispersion in occupational and plant average earnings is therefore greater than before the inequities programs were instituted. Not only has this program affected plants directly bound by the CWS scale, but also other companies in the industry.

The uniform occupational structure has provided a stable and orderly wage relationship within plants. But there has been no such correspondence between earnings and job classification. Only as "new" incentive systems replace "old" ones and adjustments are made in both to fit new conditions, is the correspondence increasing. The improved alignment of earnings with job classifications contrasts with the declining skill differentials found by Stieber to have occurred between 1907 and 1938.

Many other conclusions are noteworthy. He repeatedly emphasizes the importance of union support for the effective operation of the evaluation system. He found that industrial engineers can prove as flexible in administration as industrial relations men. He favors union participation in the formative stages and in the original installation and administration of a job-evaluation program.

This is a useful, careful study of a job-evaluation program, operated in an industry with wage levels far exceeding local labor-market levels. As such, much of its value is that of the analysis of problems of a special case in job evaluation.

SOLOMON BARKIN

Textile Workers Union of America

Wages in Germany, 1871-1945. By GERHARD BRY. National Bureau of Economic Research General Series No. 68. Princeton, N.J.: Princeton University Press, 1960. Pp. xxvi, 486. \$10.00.

Professor Bry has recorded the behavior of wages in an important industrial country over a period of three-quarters of a century. It is an exhaustive study, based on a large amount of research. The data stem from published time-series and from those he constructed from secondary sources. He analyzes the bases and validity of existing indices, makes imaginative use of inferences

where directly applicable data were unavailable, and his writing proves a thorough perusal of the entire literature on the subject. The data on which the analysis is based are reproduced in an appendix of 150 pages, which is a mine of information and a demonstration of the painstaking work that has gone into the compilation of the series. As in every National Bureau publication, all this has been done with a high degree of competency and accuracy, and it will provide plenty of material for many a theoretician to find a basis for general theories of wage behavior.

Nor is this a period lacking in general interest: its inception is the beginning of the German Reich, it comprises the 19th century industrialization, both world wars, the fantastic period of inflation, the great depression and the third Reich. Wage behavior is described in all its ramifications, including the behavior of money and real wages, skill, age and sex differentials, response to a variety of business cycles, as well as wars and inflation. The phenomena described are explained by the events that brought them about, and analyzed in terms of the causes that might account for their particular behavior in the immediate context. And yet, notwithstanding his admiration for the great achievements of such a large undertaking, the reader is left wistfully disappointed.

Although he has been permitted to observe the different kinds of wage behavior through the author's clear description—often, particularly when he is dealing with the last quarter-century, in clear and interesting prose—he feels the need of relating the results to a larger context. Though labor events in Germany may be interesting in themselves, for some readers they become generally important in their contribution to a broader understanding of the response of wages to economic occurrences, of how private or public wage policies might bring about desired economic results, and in helping reformulate and clarify general wage theories. Maybe this should not even be a criticism, inasmuch as the author himself indicates that his study might “be helpful for an appraisal of generalizations of this sort” (p. 11)—in other words, it lies beyond the task he set himself. Also, the last chapter, which compares German wage behavior with British and American experience during the same period, permits—often by implication—applications leading to some general conclusions. Nonetheless, this rich material would have lent itself so well to posing hypotheses and investigating their applicability, that one cannot help being disappointed to see it left to the next scholar to pluck the fruit.

Some nuggets make very interesting contributions to wage theorizing. Bry seems to feel generally that wages are more apt to follow the prevailing economic conditions than either price movements or the behavior of unemployment. He disputes Bresciani-Turroni's contention that changes in wage-price ratios are closely related to unemployment fluctuations (p. 221), and points out that these changes may depend more on the particular phase of the cycle or the degree of inflation at the time. Similarly, Bry warns that the resemblance between the movements of real earnings and per capita production is misleading, and he suggests that the trend of real wages primarily follows the country's economic fortunes (p. 79). He observes that in all three industrial countries (Germany, Britain and the United States) many wages hold their

own when living costs decline mildly, and respond to radical price declines with relatively smaller decreases. For Germany he strongly asserts the positive conformity of real wage rates with changes in business conditions as the norm, in other words the correlation of money and real wage rates to business cycles. He points out that this contradicts Keynes' theory that money and real wages move in opposite directions, and thus bears out Dunlop and Tarshis in their famous *Economic Journal* articles (rather than Ruggles). Normally, he finds, German "real wage rates rise during mild contractions and during early phases of severe conditions, but decline as the depression deepens" (p. 302).

The comparisons between the three countries are particularly interesting since they have had comparable industrial histories and have been the center of industrialism during this three-quarter century. Over the longer run, there are many similarities in movements, though usually German responses to economic events are stronger, particularly in wartime, than British, let alone American reactions—indicating the relative degree of involvement. It seems, however, that we could have learned more by analyzing the discrepancies rather than the similarities between these countries.

The institutional differences are, for instance, often quite instructive. While uniform unionism grew in Britain, the German feud between "free" unions, largely tied to the socialist party, and the "Christian" unions, which were a response to the former's antichurch attitude, made union development difficult (p. 30); the political (and economic) implications of this difference, which produced different attitudes toward parties and toward state action, should have been explained in detail. It is also of interest to learn that while Bismarck suppressed unions vigorously, he found it necessary to counteract this action by social reforms (nationwide sickness, accident and old-age insurance), which turned out to be permanent. In the postwar period, strong unions were opposed by strong employer associations (as was the case earlier in, e.g., Scandinavia), so that generally accepted collective bargaining permeated the economy, and agreements were often declared binding on nonsigners in the same industry. A comparison with U.S. experience in the 'twenties may show that this institutional situation explains better the relatively more pronounced German tendency toward downward wage rigidity, i.e., the greater lag of wage changes after the business turning point (p. 296). It may be worth noting that, when the Nazis took over, they abolished unions as such, and tried to hold wages stable. At the same time in the United States collective bargaining was encouraged as were wage increases. Social measures added other income to workers' earnings, while in Germany resources were coaxed into armaments!

Employer organizations were often based on cartelization, particularly in producers' goods, thus permitting, with price controls, profitable expansion under the Nazis (p. 254)—a phenomenon which facilitated the organization of industry into corporate "estates" which could then be better directed and controlled. As far as wages were concerned, Nazi controls prevented them from rising beyond depression levels. Bry describes the system by which worker movements were strictly controlled through work books and job assignments, production incentives were constantly re-adjusted to keep earnings down, and even with increased hours workers' earnings were held below the 1929

level. However, this reviewer feels strongly that the author has taken the controls on paper too seriously, and has exaggerated their efficacy. Not only are money wage statistics deceiving, because food from the farm or different kinds of "loot" sent by soldiers from occupied countries may have actually changed the "real" income of many; but, more importantly, the author seems to be overly impressed with the totality of the Nazi war machinery, which is contradicted by the findings of the U.S. Strategic Bombing Survey. Having served with it, this reviewer is convinced that Germany fell short of total mobilization, as compared with other belligerents, particularly Great Britain. Labor was not fully transferred to essential occupations, nor were women fully mobilized. Civilian consumption levels seemed to indicate a "guns and butter" philosophy long after the Allies had cut down on nonessentials. While forcing foreign laborers into work helped, the total employment of Germans stayed the same throughout the war, not even taking full advantage of the natural population growth. The employment of British women jumped by 50 per cent while domestic work shrunk considerably—neither of which occurred in Germany. This may explain the success of wage controls more completely than the author's reliance on the completeness of the control apparatus, which he contrasts with the inefficient system in the first world war. The powers of conscription and labor control were more complete than democracies would dare impose, yet women drifted out of the labor force, the total number of Germans in the armed forces plus civilian employment stayed virtually the same throughout, and the hours worked never, on the average, much exceeded the 48-hour level. It was not until the labor scarcities of 1944 were experienced that late and therefore not-too-successful attempts were made to invoke stringent manpower and wage controls. It seems useful to mitigate the impression from Bry's statistics by this information which was obtained by on-the-spot interviews and information available when the war was almost over.

One final point: we have, since the war, been particularly conscious of the dangers of inflation. This makes the author's description of the German hyperinflation of 1922-23 doubly interesting. Unless we have read Fallada's books (e.g., *Wolf among Wolves*) we are quite unaware of this fantastic phenomenon. For example, in 1919 wages quintupled prewar levels, in 1920 they were 10 times as high, in 1921 20 times, mid-1922 50 times, end-1922 500 times, mid-1923 10,000 times, and at the end of 1923 a trillion times (p. 214). The flight into physical goods, both by producers (inventory, raw materials, even equipment) and consumers (from food to jewels) led eventually to a situation in which the workers' wives obtained their wages in the morning, lest their purchasing power be halved come evening. The honorarium for a lecture failed to pay for subway fare! It makes fascinating reading.

This is an impressive work. It is probably "the most comprehensive study of wage behavior available for any country," as the dust-cover claims. None of the suggestions made above should be interpreted as detracting in the least from the great merits of this volume, and its great importance for further scientific investigation.

KIRK R. PETSHEK

Philadelphia, Pennsylvania

Stratégie de la lutte sociale: France 1936-1960. By FRANÇOIS SELLIER. Paris: Les Éditions Ouvrières, 1961. Pp. 349. NF 18.60.

In the years since the second world war the French economy has made impressive gains; in rates of growth of output and employment, in degrees of modernizing change, its record compares well with those of most industrial countries. And yet it is not certain that the last quarter-century has seen a significant decline in the intensity of social conflict in France. The conflict has not been limited to the industrial sphere. As indicated by the Poujadist outburst of several years ago and the more recent peasant disturbances, it has been a general struggle between many social and economic groups. It is, however, in the wage-earning sector that conflict has been most acute and continuous. A significant portion of the French working class remains sullen—withdrawn from the main stream of political life, hostile to the existing order, prone to radical and even violent programs for change.

Professor Sellier's book has as its main focus this failure of "social negotiation" in French industrial relations. He analyzes the development of the French industrial relations system since 1936, covering the legal framework, the nature and results of state intervention in the labor market, industrial relations at the plant level, the strategy and tactics of negotiation, and the strike. In his analysis he emphasizes the extraordinary impotence of organized French labor in matters of direct control over terms and conditions of employment. The French labor movement has been with few exceptions incapable of organizing effectively at the plant or shop level. Its achievements in collective bargaining have been sporadic in time and limited in extent. Genuine collective bargaining has in fact had only a brief and insecure existence. For most of the past 25 years government decisions have been decisive in the determination of wages and conditions of work. Even since the legal abandonment of government wage-fixing in 1950, minimum wage policies and imposed settlements have continued to give government the major role in the labor market. Real negotiation between the two main parties remains a rarity. Joint wage negotiations, for example, are restricted to the establishment of minimum rates on an industry-wide (usually regional) basis; actual rates are in general determined by unilateral management decisions in each plant or company. Plant-level negotiation of any but the most innocuous issues is indeed rejected in French managerial ideology; with some few exceptions, French managers conceive of collective bargaining as something foreign to the plant, a sort of diplomatic function performed for them by paid ambassadors (employer association representatives) at the rarified and impersonal level of the industry or the nation. Even the much-heralded Renault agreement of 1955, Sellier points out, was hardly the triumph of joint negotiation it was advertised as being; basic provisions of the agreement were so drawn as to leave execution to managerial discretion.

Sellier regards this absence of the practice and habit of negotiation as fundamental in explaining the instability of French industrial relations. The responsibility for it he places on French management and on the nature of French law in the field of labor relations. In their struggle to retain unfettered

action French managers have been heartily assisted by the law, which has defended managerial and property rights with vigor, but has provided small protection for trade union organization in the plant. Although he does not specifically say so, it is clear from a number of wistful references to the Wagner Act that Sellier believes French law could profitably incorporate the American legal concepts of unfair labor practices and the duty to bargain.

Many of the characteristics of the French pattern of industrial relations can doubtless be explained by the legal environment and by management refusal to recognize the legitimacy of union organization in the plant. But in most other industrial countries management groups either have chosen (as in Sweden) or have been obligated (as in the United States) to recognize and negotiate with organized labor. Why has this not occurred to a greater extent in France? One highly relevant factor is the ideological cast of the labor movement; the long and continuing revolutionary tradition of at least a large segment of the French proletariat is certainly not without influence. The main stream of French labor has always regarded negotiation with management as somehow debasing, as dealing with the enemy. This has meant on the one hand an added unwillingness to negotiate on the part of management, and on the other hand a tendency within the labor movement itself to reject negotiation, to regard it as a bourgeois preoccupation with mere "corporate" or occupational interests.

Granting the importance of the ideological factor leads to another question: why has not the revolutionary ideology of the French working class become, as in other industrial countries, more temperate? The decline of influence of the Communist Party and other recent developments suggest that some such mellowing may in fact be occurring, but less than in most industrial countries. The reason probably lies somewhere in the peculiar nature of French political life, the exclusion of the wage-earning class from effective and sustained participation in political and economic decision-making, and the apparent failure of the French economic system to spread the fruits of economic expansion in such a way as to substantially narrow the gap between the material aspirations of the working class and its material rewards.

Sellier unfortunately does not go into these matters to the extent that they deserve, possibly because his study seems to be based mainly on the experience and attitudes of the Catholic unions (*Confédération Française des Travailleurs Chrétiens*); most of his citations on union ideology and strategy are taken from CFTC documents. He briefly discusses radical labor ideology, but only as a factor in employer reluctance to negotiate. Nor—except for some data showing a sharp decline in the share of wages in national income between 1938 and 1947—does he tell us very much about the behavior of real wages and income distribution over the period he is considering. The effects of the family allowances system, which some writers regard as highly significant, are not explored. He does however suggest that wage-setting procedures in the postwar period have tended to cause periodic declines in real wages; by delaying tactics in wage negotiations government and employers have lengthened the lag between price changes and wage adjustments.

Sellier's book has much that will be of interest to students of comparative industrial relations. His chapters on the effects of government minimum-wage policy, and on the wage effects of the structure of collective bargaining, contain many suggestive insights into the economic consequences of union structure, negotiating strategies, and the general problem of wage-price relations in periods of full employment. It is unfortunate that Sellier has not given more detailed treatment to the economic analysis of the problems he raises. The book also suffers from a sparsity of supporting statistical evidence, which is surprising in the light of Sellier's stress on the importance of the economic environment in conditioning industrial relations behavior. The organization of the book, furthermore, makes for a certain ambiguity as to the direction of change; by treating the period 1936-1960 as a unit Sellier leaves unexplored the effects of the rapid growth of the French economy since 1950 and changes in the structure of the economy, such as the relative decline of the family firm. Finally, the usefulness of the book to the nonspecialist (and particularly the non-French) reader would have been enhanced by the inclusion of a bit more basic institutional background. Because the book is in the nature of an interpretative essay, the reader innocent of the main features of the French economic and social landscape may not be able to make his way easily through some of it.

ELLIOT J. BERG

Harvard University

Labor Economics and Institutions. By ARTHUR D. BUTLER. New York: The Macmillan Company, 1961. Pp. xxi, 595. \$6.50.

Professor Butler has produced a solid text for an introductory labor economics course. It is well-ordered, maintains interest without sacrificing analysis, and within a reasonable length it covers the material that most beginning labor courses are made of.

The book's 25 chapters are divided into five parts: (1) Unions and the Labor Force; (2) Collective Bargaining; (3) Wages; (4) Unemployment and Economic Insecurity; and (5) The Major Trends. The final section briefly discusses the evolution of the major issues in labor economics and labor relations, and offers some well-hedged predictions about the important issues of the future. If Butler's foresight proves accurate, our concerns will be jurisdiction, wages, management rights, government intervention into key wage-bargaining situations and centralized control over bargaining. We will not be worrying about labor's political power, because it will not increase significantly.

Part I follows a format by now rather traditional for beginning labor economics texts, dealing essentially with the questions: What is the labor force? Who is in it? Why have workers formed unions? How are unions governed? What does the future hold for unionism?

A useful innovation is made in the collective bargaining section. Public policy toward collective bargaining is treated together with the more traditional analytical and institutional material. Fully a third of Part II is devoted

to chapters on "Antitrust Regulation of Unions," "Government and Collective Bargaining," and "National Emergency Disputes." Although the treatment of public policy is a bit thin at times, if the course is organized around this text, students are likely to get more actual exposure to this material than customarily occurs in the introductory course.

In his chapters on wages, Butler's prose is sparing, and his omissions by and large welcome. Gone are the interminable discussions and classifications of early wage theories, and in their place is a brisk presentation of wage determination in the firm under varying assumptions. This is followed by a useful chapter which summarizes recent research into the determinants of wage structures and patterns.

I found the chapter "Unions and Wages," a bit tiresome. Devoted entirely to the question of whether or not unions influence wages, the author finds, at length, that they do, or they do not. His conclusion is hard to reconcile with the later prediction that government is likely to play an increasingly important role in key wage bargains. Much of this discussion could, in my view, be sacrificed for some material on the meaning and uses of productivity measures (such as is found in the much longer volume by Bloom and Northrup).

But despite these and other quibbles one may have with it, the text is a good one, and should prove to be an effective teaching instrument. Butler has given more than routine thought to the discussion questions which follow each chapter, and the bibliographies are selective and useful.

One appealing feature which, in my view, sets this book apart from many of its older competitors is the rather sophisticated discussion of the relationships of trade unionism to economic stability and growth. The three concluding chapters to Part IV deal entirely with the larger economic context of unionism, and include brief discussions of British and Swedish experience.

Labor economics texts are changing in another respect too: Jimmy Hoffa now receives more notice than John L. Lewis.

EARL F. CHEIT

University of California, Berkeley

Labor Problems and Processes. By L. REED TRIPP. New York: Harper & Brothers, 1961. Pp. xviii, 510. \$6.00.

The study of labor problems demands a knowledge of many social sciences. Few are the economic principles which apply. Social institutions can be studied as they exist, with the impact of the past upon them, the psychology of the present, and the objectives, goals and political pressures of diverse groups. Professor L. Reed Tripp is an institutionalist. He is not a product of the University of Wisconsin but he is on the faculty of that university and has had much of his philosophy molded by Selig Perlman and Edwin Witte to whom he has dedicated the book.

The book is divided into seven parts. Each part has a prologue containing the gist of the author's philosophy, and each chapter within the part has a conclusion summarizing the points of significance made in the chapter. This arrangement makes for a sense of continuity in the presentation as well as

ease of transition from topic to topic. Thus Part I entitled the American Labor Movement, presents in eight chapters the historical development of the labor movement, the origin of the A.F. of L., the C.I.O.-A.F. of L. merger, unionism since the second world war, an excellent analysis on labor theory as developed by Hoxie, Mitchell, Commons and Perlman, and the "human relations" school, a description of the structure and function of contemporary unions, and a chapter on interunion activities.

Part II includes a discussion of the problems and characteristics of the labor market. An analysis of the free market theory—the pet of many economic theoreticians, in contrast with the collective bargaining view, and the influence of the determination of wages by government regulation. Free market theory pictures the worker as having a choice among many jobs. Tripp shows that the realities of the labor market fly in the face of the notions of economists. Only the study of the *behavior* of workers and employers, their psychology and the sources of their securities and insecurities, can throw light on actual labor-market operations. Analysis in terms of the marginal productivity theory of wages, and the use of mathematical tools such as calculus, may provide a theoretical model, but so far it has had little relation to the practices of the labor market. "Inductive studies of results in the real world reveal such discrepancies, as to question the relevance or applicability of the analysis," declares Tripp.

Part III presents a discussion of labor legislation and the governmental framework of the labor market, including minimum labor standards, social security legislation, and labor relations legislation.

Part IV includes four chapters on collective bargaining ranging from negotiation, through union goals and management needs, as well as a discussion of the cost-income aspects of collective bargaining. Tripp cleverly juxtaposes the theories of the economist vis-à-vis the practical psychology and practice of Joe Doaks, the worker, and his counterpart in management.

Part V deals with the institutional operation of the labor market, wage criteria of the bargaining table, and the influence of the economic, political, and social forces of the nation, as they impinge upon the bargaining process. The consideration of the "alternatives" to collective bargaining is somewhat blurred by the controversial interpretations of inflation. "The uneasy triangle" is the dilemma of modern capitalism: (1) the maintenance of a high level of employment, (2) relative stability of the price level, and (3) the preservation of as broad a scope as possible, of free decision-making as to prices and free collective bargaining as to wages. Modern economic policy may achieve any two of these objectives but can all three be realized? However, Tripp indicates that "to the extent that collective bargaining wage levels are arrived at realistically in terms of company prospects on the employer's side, and fear of wage and job loss on the union side," the uneasiness of the triangle may be exaggerated!

Part VI is an analysis of government labor policy involving the regulation of collective bargaining, a consideration of public emergency disputes, and governmental employment and unemployment policy. Part VII has to do with international labor affairs. There is an excellent, albeit concise, chapter contrasting foreign and U.S. labor movements, a consideration of U.S. labor

activities abroad, and a final chapter on the struggle of the "isms" and their influence on organized labor.

Tripp discusses the stimulus function of organized labor in economic growth. He declares that conflict itself in the collective bargaining arena, can have positive values in the context of economic growth. Efforts to minimize costs might effectively wipe out the values.

The author has described a dynamic aggressive economy including an equally dynamic labor movement. What if technology and social and political forces of our society so influence the labor force that it cannot use trade union organization or the power of political pressure groups? Who then will make the decisions for their welfare?

The book is excellent as a survey of labor problems and the processes for solving them. It is unencumbered by statistics which are rapidly outdated, and by conflicts between theories and realities—a source of bewilderment for many college students.

THERESA WOLFSON

Brooklyn College

Population; Welfare Programs; Consumer Economics

Doctors, Patients, and Health Insurance. By HERMAN M. AND ANNE R. SOMERS. Washington, D.C.: The Brookings Institution, 1961. Pp. xix, 576. \$7.50.

This is a timely book—as our newspapers and popular magazines attest—and it is a good one. It will serve as a benchmark, a classic in the literature on economic and social aspects of medical care for many years to come. And the Somers' book deserves a further accolade; it is a model for studies of public policy issues. The authors show a healthy respect for the complexity of their subject, a dedication to the processes of our democracy, and sufficient humility to avoid dogmatism in their judgments and conclusions.

Organization, distribution, and financing of medical care, and the changing institutional environment surrounding these activities are the Somers' main concern. They see their subject as a subtheme in "the central plot of all social history—man's struggle to rearrange his social organization and institutions to keep pace with his accumulating knowledge, changing needs, and altered environment" (p. 493).

In the field of medical care, public and private action complement each other in an increasingly "mutually supportive and sustaining relationship," the Somers believe, and they predict that: "The future pattern of our medical economics will remain in the typical American pluralistic tradition, although the balance of emphasis may shift periodically" (p. 532).

The first part of the book deals with the supply side of medical care. In this section the authors consider specialization and rising productivity in medical practice, the relative decline in the number of doctors, the growth of paramedical professions, and the role of the hospital, pulled in different ways as a doctors' workshop and as a community health center.

The Somers question whether hospitals "will be permitted to continue in

relatively extravagant autonomy or whether, as they consume an increasing portion of public and personal budgets, the public will insist upon coordination in one way or another" (p. 90). They see here the dilemma in organizing all medical care, "the necessity of reconciling large-scale organization and large-scale financing with the continuing need for highly individualized services" (p. 70). And they warn that "the general patterns of professional-consumer relationships have not yet yielded substantially to the changing circumstances, and medical care remains almost entirely controlled by the suppliers" (p. 499).

In a section on "The Revolution of Rising Expectations in Consumer Demand," the Somers point to development of the concept of "adequate medical care" as a human right, hence a political issue, but they warn that "universal access to medical care may have to be accompanied by some institutional restraints on the consumer" to prevent irresponsible and costly medical care demand patterns, particularly in hospital utilization (p. 166). But doctors have a determining voice in the volume and character of effective demand, the Somers say, pointing out that hospitalization, the most expensive kind of medical care, requires a doctor's authorization.

The interaction of demand and supply in "the changing medical marketplace" has resulted in increasingly active efforts—public and private—to ease the burden of rising medical-care costs. The Somers point to a fundamental institutional change in the rapid development of "third party" arrangements for payment, prepayment, or insurance to meet these costs. They devote a chapter to employee health care programs, including a discussion of organized labor's goals in collective bargaining and public policy, a field explored more thoroughly in Joseph W. Garbarino's *Health Plans and Collective Bargaining*.

The Somers see great significance in labor union support for public health insurance for the aged, the disabled, and the unemployed. They believe—and experience of members of Congress tends to corroborate this belief—that employer opposition "has been at least partly neutralized by the argument that such a program would probably cost less than equivalent benefits financed privately." This belief leads them on to say: "Thus it is increasingly clear that the vendors of medical care in the United States are confronted for the first time, with organized and effective countervailing power—in both the economic and political spheres" (p. 242).

The longest section of the book, "Private Health Insurance: Programs, Pressures, and Problems," describes the major health insurance carriers—commercial companies, Blue Cross, Blue Shield, and the independent programs; and there are useful, informative tables in the appendix. But the Somers warn that "the absence of complete or comparable data in this field is a formidable obstacle to objective analysis and public policy conclusions" (p. 259).

The hot political issue of health insurance for the aged is only one aspect of the total problem of effective protection for the general population against health costs, and the Somers clearly favor the social security approach in this instance. "The assumption by government of responsibility for the poorer risks—with which private insurance cannot profitably cope to the public satis-

faction—could liberate the [insurance] industry to met successfully the challenge to survival in the much larger area of those under 65" (p. 450).

The Somers believe that private insurance can and probably will remain the primary method of financing medical care in this country, with insurance benefits rising from one-quarter to two-thirds of total spending on medical care. But rising demand for more comprehensive health services and more complete financial protection will increase the difficulty of controlling skyrocketing medical and health insurance costs.

Herman M. Somers, head of the political science department at Haverford, was a member of the President's Task Force on Health and Social Security. With his economist wife, he has given us a revealing look into the economics of medical care.

MARKLEY ROBERTS

Assistant to Senator Hubert H. Humphrey

TITLES OF NEW BOOKS

General Economics; Methodology

- AMOROSO, L. *Le leggi naturali della economia politica*. Turin: UTET, 1961. Pp. xii, 290.
- BANBURY, J. AND MAITLAND, J., ed. *Proceedings of the Second International Conference on Operational Research (Aix-en-Provence 1960)*. With résumés in French. New York: Wiley, 1961. Pp. xx, 810. \$15.
- BRAND, H. W. *The fecundity of mathematical methods in economic theory*. Dordrecht: D. Reidel, 1961. Pp. viii, 56. f 12.75.
First pub. by Fritz Knapp, Frankfurt am Main. Transl. by E. Holmstrom.
- BRESCIANI-TURRONI, C. *Saggi de economia*. Milan: A. Giuffrè, 1961. Pp. v, 634.
- BRUNSWICK, A. F. AND SHEATSLEY, P. B. *A personal interview survey of college economics teachers (conducted for the American Iron and Steel Institute)*. Rept. no. 79. Appendix, Tables, Rept. no. 79-A. Chicago: Nat. Opinion Research Center, 1961. Pp. 55; 51.
- DEVONS, E. *Essays in economics*. London: Allen & Unwin, 1961. Pp. 203. 25s.
- DODD, J. H. AND HAILSTONES, T. J. *Economics—principles and applications*. 4th ed. Cincinnati: South-Western, 1961. Pp. xii, 849. Instructor's manual available.
- FENN, D. H. *Managing America's economic explosion*. New York: McGraw-Hill, 1961. Pp. 269.
- GÜLICH, W., ed. *Wörterbuch wirtschaftlicher Fachausdrücke—Italienisch-deutsch*. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. vii, 256. DM 15.
- HARLAN, H. C., ed. *Readings in economics and politics*. New York: Oxford Univ. Press, 1961. Pp. xvi, 751. Paper, \$2.75.
- LISLE, E. *L'Anglais économique—dictionnaire de concepts*. Paris: Bd. Cujas, 1961. Pp. xxxv, 199.
The introduction is in both French and English; the dictionary itself is in English. "The purpose . . . is to show how economic literature can be read with a view of grasping economic language." The book is particularly designed for the use of those whose native language is not English, to help them understand the precise meaning of a large number of English economics terms.
- SELDON, A., ed. *Agenda for a free society—essays on Hayek's *The Constitution of Liberty**. London: Hutchinson for Inst. of Econ. Affairs, 1961. Pp. 192. 25s.
- SOUTLE, G. with assistance of TRAYWICK, L. E. AND BODDY, F. C. *Economics—measurement—theories—case studies*. New York: Holt, Rinehart and Winston, 1961. Pp. xii, 446. \$5.75.
- SIEGEL, H. W. *Current economic problems*. 3d ed. Homewood: Irwin, 1961. Pp. x, 694. \$7.95.
- International bibliography of economics*. Vol. 8. Prepared by Internat. Com. for Soc. Sciences Doc. in coop. with Internat. Econ. Assoc., UNESCO pub. New York: Internat. Doc. Svce., Columbia Univ. Press, 1961. Pp. 560. \$10.
- The teaching of economics in Latin America*. Stud. and monogr., 1. Washington: Pan American Union, Gen. Secretariat, Org. of American States, 1961. Pp. xi, 100. 50c.
A report to UNESCO, UNECLA and OAS by H. S. Ellis, B. Cornejo and L. E. Cerda.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- COOKE, H. J. *The role of debt in the economy*. Washington: Pub. Affairs Press, [1961]. Pp. 115.
- DEL VISCOSO, M. *La localizzazione delle attività economiche*. Padua: CEDAM, 1961. Pp. 293.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Senior economist: Economics division of New York research institution has opening for senior economist. Ph.D. in economics and experience in economic research. Combined research and teaching background desirable. Familiarity with national income accounts and application of economic theory to analysis of current developments; writing experience and skill essential. Starting salary from \$10,000 to \$15,000, depending on qualifications. Liberal pension and other benefits. P242

Head, Department of Business Administration: Opening in a rapidly growing state college in the South. Doctor's degree in economics or in some field of business administration required. Departmental staff consists of ten full-time faculty members. Rank may be professor and salary may be to \$11,000 for eleven months depending upon qualifications. Write: Dean Thomas J. Stanly, Nicholls State College, Division of Applied Sciences, Thibodaux, Louisiana.

Petroleum economist: A major oil company offers opportunity in the southwest for an economist with a graduate degree, doctorate preferred. Experience in the petroleum industry would be helpful but not required. Position requires ability to conduct independent research on a wide variety of problems related to industry and company operations. Salary depends upon education and experience. Please send résumé giving full account of professional background and experience. All replies will remain strictly confidential. P243

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Head, Department of Economics: Rank of professor. Ph.D. in economics, teaching experience, publications, and experience in directing doctoral dissertations are required. Salary dependent on qualifications. Midwest, September, 1962. P244

Business and economics: Applications are requested for the position of assistant professor, business and economics, fall, 1962. Requirement: Ph.D. and some teaching experience. Division of Social Sciences, University of Minnesota, Duluth 12, Minnesota.

Economics and statistics: The Federal Trade Commission has vacancies for several economists. Candidates should have thorough academic training in economics and statistics. Preference will be given to candidates with training and research experience

Rashi Fein, University of North Carolina: assistant to chairman, Council of Economic Advisers.

Victor Fuchs, New York University: Economics and Administration Program, Ford Foundation, 1961-62.

Frank H. Gane, Northwestern University: visiting professor of finance, Graduate School of Business, Stanford University, 1961-62.

Arnold C. Harberger, University of Chicago: special research assignment, Center for International Studies, Massachusetts Institute of Technology, New Delhi, India, 1961-62.

Albert G. Hart, Columbia University: fiscal economist from United Nations to the Treasury of the Government of Chile, 1961-62.

Leo Katz: Ford Foundation visiting professor, School of Business Administration, University of North Carolina, 1961-62.

Harold Q. Langenderfer, University of North Carolina: program specialist, Management Development Institute, Cairo, United Arab Republic, auspices of Ford Foundation.

Thomas A. Mahoney, University of Minnesota: conducted seminars on management development in South Africa summer 1961, sponsored by National Development Foundation of South Africa.

Theodore Morgan, University of Wisconsin: with International Bank mission to Kenya first semester of current year.

Ralph Nelson, South Dakota State College: with International Cooperation Administration as economic advisor to the Ministry of Agriculture, Ankara, Turkey, for two years.

Arnold A. Paulsen, Iowa State University: member of Harvard Advisory Group in Iran.

John Power, Williams College: Economic Development Institute, Karachi, Pakistan, beginning February 1962.

Eugene Rotwein, University of Wisconsin: visiting professor of economics, University of California, Berkeley, 1961-62.

Herbert Schiller, Pratt Institute: visiting research associate professor, University of Illinois Bureau of Economic and Business Research, 1961-62.

Taro Yamane, New York University; Aoyama Gakuin University, Tokyo, Japan, 1961-62.

Resignations

James D. Emery, College of Commerce, West Virginia University.

Bernard P. Herber, University of Arizona.

James F. Huston, College of Commerce, West Virginia University.

Carl C. Malone, Iowa State University, to remain in India with Ford Foundation program.

Miscellaneous

William Goldner, University of California, elected president of Western Section, Regional Science Association.

John E. Sawyer, Yale University, now president of Williams College.

Steven J. Shaw, editor, *Business and Economic Review*, Bureau of Business and Economic Research, University of South Carolina.

Joseph H. Young, University of Miami, now president, Bowling Green State College of Commerce, Bowling Green, Kentucky.

Olin S. Pugh: Chair of Banking, School of Business Administration, University of South Carolina.

Sher J. Rana, University of Puerto Rico: associate professor of economics, Nichols College.

Mary T. Reynolds: research associate in economics, Yale University.

Hugh Rose, University College, Exeter: associate professor of economics, University of Rochester.

Nancy D. Ruggles: research associate in economics, Yale University.

Luis R. Sanchez: economics department, The RAND Corporation.

G. T. Schwenning, professor emeritus, University of North Carolina: visiting lecturer, School of Business, Florida State University, 1961-62.

Barnard Seligman: instructor in finance, New York University.

Milton Shapiro: visiting instructor, University of Southern California.

Richard U. Sherman, Jr.: Merston professor of economics, Ohio State University.

Nat Simons, Jr.: assistant professor of economics, Michigan State University, Oakland.

Jacques J. Singer: research director, Economic Research Corporation Ltd., Toronto.

J. Graham Smith: instructor in economics, Ohio State University.

William P. Smith: instructor, department of economics, Pennsylvania State University.

Philip E. Sorenson, University of California, Berkeley: instructor in economics, Claremont Men's College.

Herman Stribling, University of Alabama: Alabama College.

Vincent D. Taylor: economics department, The RAND Corporation.

John J. Treacy, Tulane University: assistant professor of economics, Texas A. and M. College.

Richard A. Tybout, Ohio State University: Resources for the Future.

Donald A. Walker, Boston College: assistant professor of economics, Miami University.

Francis Walker, Purdue University: Department of Agricultural Economics, Ohio State University.

Wallace G. Webb: assistant professor of economics, School of Business Administration, University of South Carolina.

Michael T. Wermel, University of Hawaii: director of unemployment insurance research, W. E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

Gerald A. Weston: instructor, department of economics, Washington State University.

William White: lecturer in economics, Georgetown University.

J. N. Wolfe: professor of economics, University of California, Santa Barbara.

Max S. Wortman: assistant professor, department of labor and management, State University of Iowa.

J. Meade Wright: lecturer in accounting, School of Business Administration, University of North Carolina.

George Wythe: lecturer in economics, Georgetown University.

Stephen A. Zeff, University of Michigan: assistant professor of accounting, Tulane University.

Joseph Zrinyi: instructor in economics, Georgetown University.

Leaves for Special Appointments

Martin L. Black, Jr., Duke University: Fulbright lecturer, Yokohama National University of Japan, 1961-62.

Martin David, University of Wisconsin: Tax Analysis Division, U.S. Treasury, current year.

Moon H. Kang, Western State College of Colorado: assistant professor of economics, University of Alaska.

Arthur Kirsch, Long Beach State College: assistant professor, department of economics, Los Angeles State College.

Robert Lee Knox: assistant professor of economics, The College of William and Mary.

Shou-Eng Koo: assistant professor of economics and statistics, John Carroll University.

Frank Kottke: professor of economics, Washington State University.

A. E. Kovacs: assistant professor of economics, department of economics and political science, Assumption University of Windsor.

Arthur Kruger: lecturer in economics, University of Toronto.

Alexis E. Lachman, formerly financial advisor to the Finance Minister of Laos: program officer, U.S. Economic Aid Mission (ICA) in Turkey.

Edward J. Lauesen: lecturer in marketing, School of Business Administration, University of Miami.

Richard L. Leighton: assistant professor of economics, The College of William and Mary.

Fred H. Leonard: instructor in economics, Miami University.

Hall Logan, Texas Christian University: professor of management, University of Arkansas.

Sterling R. McLean, University of Texas: associate professor of business administration, Arkansas State College.

John E. MacNab, St. Lawrence University: economist, Canadian Tariff Board.

Harry Malisoff, Brooklyn College: research associate in unemployment insurance, W. E. Upjohn Institute for Employment Research, Kalamazoo, Michigan.

Howe Martyn: professor of international business, The American University.

Arthur Matson: department of economics, South Dakota State College.

Arnold K. Mattay: assistant trust officer, First National Bank, Dallas.

John R. Matthews, Jr.: assistant professor of economics, The College of William and Mary.

Richard C. Maxon: extension associate, department of economics and sociology, Iowa State University.

Phillip A. May: University of California, Riverside.

Donald C. Mead: instructor in economics, Yale University.

Jacob P. Meerman: assistant professor of economics, Washington State University.

Ian M. Michal: associate professor of economics, Western Maryland College.

Franco Modigliani: professor of economics, Northwestern University.

Alan P. Murray, Lafayette College: member, Tax Analysis Staff, U.S. Treasury Department.

Phillip Nelson, Columbia University: assistant professor of economics, Graduate Faculty of Political and Social Science, New School for Social Research.

John H. Niedercorn: economics department, The RAND Corporation.

Dorothy L. Ochsner: instructor in economics, Oklahoma State University.

James Owens: associate professor of business administration, The American University.

Herbert S. Parnes, Ohio State University: Organization for European Economic Co-operation, Paris, France.

Murray E. Polakoff, University of Texas: professor of business administration, University of Rochester.

Robert J. Porter, University of North Carolina: research associate, Bureau of Business Research, University of Kentucky.

Diomedes D. Psilos: lecturer in economics, University of Maryland.

- William Earnhart: instructor in economics, Harding College.
- Daniel J. Edwards: economist, Board of Governors of the Federal Reserve System.
- Andrew Fioriti: instructor in accounting, New York University.
- Charles P. Fishbaugh: instructor, department of economics, Bowling Green State University.
- Belton M. Fleisher: assistant professor of economics, University of Chicago.
- Raymond T. Franklin: instructor in economics, Vassar College.
- Lloyd W. Frueh II: instructor in economics, Miami University.
- James A. Gherity, Jr.: assistant professor of economics, School of Business Administration, The University of Buffalo.
- Charles C. Gillette: instructor in economics, Oklahoma State University.
- Floyd Graham: associate professor of personnel management and industrial relations, School of Business Administration, The American University.
- Sally Gray: Little Rock University.
- Reginald H. Green: assistant professor of economics, Yale University.
- Harry Greenbaum: department of economics, South Dakota State College.
- Karl D. Gregory, Wayne State University: fiscal economist, Bureau of the Budget, Washington, D.C.
- Herbert R. Hahn, Duke University: First Union National Bank, Charlotte, N.C.
- Milton C. Hallberg: research associate, department of economics and sociology, Iowa State University.
- Daniel Hamberg: professor of economics, The University of Buffalo.
- William Hamburger: associate professor of economics, School of Business Administration, University of North Carolina.
- Alvin H. Hansen, Harvard University: visiting research professor of economics, Yale University, 1961-62.
- Hugh G. Hansen: associate professor of economics, Denver Extension, University of Colorado.
- Dale E. Hathaway: Ford Foundation visiting professor of economics, University of Chicago, 1961-62.
- Richard G. Heifner: research associate, department of economics and sociology, Iowa State University.
- Gerald K. Helleiner: instructor in economics, Yale University.
- Harold M. Hochman: instructor in economics, Yale University.
- Zoran S. Hodjera: instructor in economics, Yale University.
- Eugene C. Holshouser, University of Kentucky: associate professor of economics, College of Business Administration, University of Georgia.
- Norman Horsley, United Nations Mission, Libya: visiting associate professor, department of economics, Williams College.
- George C. Hoyt: assistant professor, department of labor and management, State University of Iowa.
- Norman S. Hubbard: instructor in economics, Yale University.
- Winfield Hutton: assistant professor of economics, Hunter College.
- Frank H. Jackson, Economic Research Center, University of Hawaii: associate professor of economics, Alma College.
- John H. James, University of Indiana: assistant professor of management, University of Florida.
- Ralph James: lecturer in economics, University of California, Berkeley.
- LeRoy Johnson: assistant professor, department of business administration, Washington State University.

- G. Paul Balabanis: instructor in economics, University of California, Berkeley.
- Benjamin Barg: assistant professor of economics, University of Pennsylvania.
- Robert L. Basmann: associate professor of economics, University of Chicago.
- Donald V. T. Bear: assistant professor of economics, University of Chicago.
- Wilbur E. Benson, California Western University: associate professor of finance, College of Business Administration, University of Georgia.
- Normand R. V. Bernard: instructor in economics, Boston College.
- Brian D. Bixley: lecturer, department of political economy, University of Toronto.
- J. O. Blackburn, Duke University: American University, Beirut, Lebanon.
- Carmen G. Blough, retired, Columbia University: visiting professor, department of accounting, University of Florida.
- Harry G. Brainard, Michigan State University: visiting professor of economics, University of Arizona.
- William C. Brainard: instructor in economics, Yale University.
- Richard P. Brief: instructor in economics, New York University.
- David G. Brown: assistant professor of economics, School of Business Administration, University of North Carolina.
- Henry Bruton: associate professor of economics, Williams College, beginning July 1st, 1962; will be at the Economic Development Institute, Karachi, during 1961-62.
- Louis Buckley: adjunct professor of economics, Fordham University.
- Thomas F. Carroll: agricultural economist, Inter-American Development Bank, Washington, D.C.
- Antonio G. Casas: member, economics division, Inter-American Development Bank, Washington, D.C.
- Mariam K. Chamberlain: research associate in economics, Yale University.
- Peter M. Cody, International Cooperation Administration, Washington, D.C.: chief, program division, United States Operations Missions of Cambodia.
- John Cosgrove, Georgetown University: assistant director, Office of Civil Defense Mobilization.
- J. Walter Couper: adjunct professor, department of economics, Fordham University.
- George Coutsoumaris, Central University, Caracas: member of staff, Center of Economic Research, Athens, Greece.
- John H. G. Crispo: assistant professor of labor relations, School of Business, University of Toronto.
- Paul Davidson: assistant professor, department of economics, University of Pennsylvania.
- John N. Davis: assistant professor of management, New York University.
- Herbert S. Denenberg: assistant professor of insurance, State University of Iowa.
- Carlos F. Diaz-Alejandro: instructor in economics, Yale University.
- Paul D. Dickens, Treasury Department, Washington, D.C.: visiting professor of economics, University of Oklahoma.
- Arthur R. Dorsch, University of Florida: assistant professor, School of Business Administration, American International College.
- Myles M. Dryden: assistant professor of industrial management, School of Industrial Management, Massachusetts Institute of Technology.
- Peter Dubno: assistant professor of management, New York University.
- Dempsey M. Dupree: assistant professor of accounting, School of Business Administration, University of South Carolina.
- Frederick R. Durr, Ohio State University: associate professor of economics, The College of William and Mary.

H. M. Weingartner: assistant professor of industrial economics, Graduate School of Business, University of Chicago.

Stanislaw H. Wellisz: associate professor of business economics, Graduate School of Business, University of Chicago.

Charles Wrege: assistant professor of management, New York University.

Administrative Appointments

Ruben V. Austin, Michigan State University: chairman, department of economics and business administration, University of Delaware.

Vincent Barnett: permanent chairman, Center for Development Economics, Williams College.

Lloyd L. Bowie: head, department of business and economics, Little Rock University.

John E. Buehler: assistant to dean and director, Graduate Management Program, School of Business Administration, University of Buffalo.

Thomas C. Campbell: acting dean, College of Commerce, West Virginia University.

John Chalmers, Harpur College: dean of the College of Arts and Sciences and professor of economics, University of Wyoming.

Carl F. Christ: professor of political economy and chairman, department of political economy, Johns Hopkins University.

John M. Ferguson: chairman, department of business, William Woods College, Fulton, Missouri.

A. C. Flora, Jr.: director, Bureau of Business and Economic Research, School of Business Administration, University of South Carolina.

William B. Gates, Jr.: William Brough professor of economics and chairman, department of economics, Williams College.

James B. Hendry: assistant dean of overseas programs, Michigan State University.

Arleigh P. Hess: vice-provost, University of Pennsylvania.

Hans E. Jensen: promoted to professor of economics and dean, College of Business, Economics and Public Administration, University of Alaska.

Mark L. Kahn: chairman, department of economics, Wayne State University.

V. R. Kiely: head, department of business administration, University of Alaska.

Harvey J. Levin: chairman, department of economics, Hofstra College.

John Perry Miller: dean, Graduate School, Yale University.

Edward A. Nelson: head, department of finance, Los Angeles State College.

Richard L. Porter: chairman, department of economics, Marquette University.

W. F. Putnam: assistant to dean, School of Business Administration, University of South Carolina.

Albert Rees: chairman, department of economics, University of Chicago.

Harold M. Somers: chairman, department of economics, University of California, Los Angeles.

H. Edwin Young: dean, College of Letters and Science, University of Wisconsin.

Appointments

F. Gerard Adams: assistant professor of economics, University of Pennsylvania.

R. L. Armstrong, Jr.: instructor in management, School of Business Administration, University of South Carolina.

Harvey Averch: economics department, The RAND Corporation.

Werner Baer: assistant professor of economics, Yale University.

Maurice E. Baker: assistant professor, department of agricultural economics, Ohio State University.

James C. Ingram: professor, School of Business Administration, University of North Carolina.

Ronald W. Jones: associate professor of economics, University of Rochester.

William E. Jones: assistant professor of accounting, School of Business Administration, University of South Carolina.

Norman G. Keig: assistant professor of economics, Ohio State University.

Robert L. King: associate professor of marketing, School of Business Administration, University of South Carolina.

Israel M. Kirzner: associate professor of economics, New York University.

Alfred Kuhn: professor of economics, University of Cincinnati.

Harold Q. Langenderfer: professor of accounting, School of Business Administration, University of North Carolina.

David T. Lapkin: professor, School of Business Administration, University of North Carolina.

Mark W. Leiserson: associate professor of economics, Yale University.

Willard Lewis: assistant professor of management, New York University.

Charles E. Lindblom: professor of economics, Yale University.

Arthur D. Lynn: professor of economics, Ohio State University.

Thomas A. Mahoney: professor of industrial relations and economics, University of Minnesota.

Morris Mayer: associate professor, department of marketing, University of Alabama.

Paul Medow: assistant professor of economics, Rutgers—The State University.

Chester A. Morgan: professor of labor economics, State University of Iowa.

Benjamin Newman: professor of accounting, New York University.

Clinton V. Oster: professor of economics, Ohio State University.

William N. Parker: professor, School of Business Administration, University of North Carolina.

Ronald H. Pollock: assistant professor, department of agricultural economics, Ohio State University.

Olin S. Pugh: professor of economics, School of Business Administration, University of South Carolina.

Kenneth Quindry: research associate, Bureau of Business Research, University of Kentucky.

Albert Rees: professor of economics, University of Chicago.

Robert M. Reeser: assistant professor, department of agricultural economics, Ohio State University.

Anthony L. Sancetta: professor of economics, The College of William and Mary.

John W. Sharp: professor, department of agricultural economics, Ohio State University.

John C. Sherry: professor of social sciences, Pace College.

Stefan Stykolt: associate professor, department of political economy, University of Toronto.

Overton H. Taylor: professor of economics, Harvard University.

Carey C. Thompson: professor of economics, University of Texas.

Procter Thomson: professor of economics, Claremont Men's College.

Gene B. Tipton: associate professor of economics, Los Angeles State College.

Joseph Tryon: assistant professor of economics, Georgetown University.

S. C. Tsiang: professor of economics, University of Rochester.

Walter H. Uphoff: associate professor of labor education, University of Minnesota.

William A. Wayt: associate professor, department of agricultural economics, Ohio State University.

Visiting Foreign Scholars

Jacques Dreze, University of Louvain, Belgium: visiting associate professor, Northwestern University, winter and spring quarters.

Joseph Grunwald, Instituto de Economia, Universidad de Chile: visiting professor, Yale University, 1961-62.

Kelvin J. Lancaster, London School of Economics: visiting professor of economics, Brown University, 1961-62.

Humberto Schenone, Catholic University, Lima, Peru: Fulbright visiting professor, College of Business Administration, University of Florida, fall semester.

Shin-ichi Takezawa, St. Paul's University, Tokyo, Japan: visiting scholar, School of Business Administration, University of North Carolina, fall semester.

Promotions

Henry H. Albers: professor of management, State University of Iowa.

Raymond A. Bailey: associate professor, department of agricultural economics, Ohio State University.

Wallace Barr: assistant professor, department of agricultural economics, Ohio State University.

Charles E. Barrett: assistant professor of economics, University of Maryland.

Alan B. Batchelder: assistant professor of economics, Ohio State University.

Elmer F. Baumer: professor, department of agricultural economics, Ohio State University.

Robert E. Berry: professor of economics, Miami University.

Gordon W. Bertram: associate professor of economics, Los Angeles State College.

Frederic Brett: associate professor, University of Alabama.

Arthur D. Butler: professor of economics, The University of Buffalo.

Helen Cameron: assistant professor of economics, Ohio State University.

Joseph R. Cammarosano: associate professor, Fordham University; currently on leave with Bureau of the Budget.

Philip M. Carroll: associate professor, Colorado State University.

Marion Carson: assistant professor of accounting, University of Florida.

Avery B. Cohan: professor, School of Business Administration, University of North Carolina.

Paul G. Craig: professor of economics, Ohio State University.

Darwin W. Daicoff: assistant professor of economics, University of Kansas.

Harry C. Eastman: associate professor, department of political economy, University of Toronto.

John E. Elliott: associate professor, University of Southern California.

Ragaei El Mallakh: associate professor, University of Colorado.

George W. England: professor of industrial relations, University of Minnesota.

Grant N. Farr: professor, University of Colorado.

Daniel H. Garnick: assistant professor of economics, School of Business Administration, University of Buffalo.

Kermit Gordon: David A. Wells professor of political economy, Williams College; on leave, member of Council of Economic Advisers.

William T. Hogan: associate professor, Fordham University.

Allen M. Hoost: associate professor of accounting, New York University.

Virgil L. Hurlburt: professor, department of economics and sociology, Iowa State University.

B. Heflebower, Northwestern University, "Industrial Organization and Prices"; IV, Northwest, Oswald H. Brownlee, University of Minnesota, "Public Finance and Fiscal Policy"; V, Southwest, Edgar O. Edwards, Rice University, "Economic Analysis and Accounting"; VI, West, Wytze Gorter, University of California at Los Angeles, "International Economics and National Policy."

Fellowships provide a stipend of \$800, an additional contribution of \$200 toward living expenses, and travel expenses. Preference will be given to applicants under 50 years of age who have had at least three years of teaching experience since attending graduate school. Applications may be secured from the seminar director in the applicant's region, and must be submitted before January 15, 1962. Brochures defining regions and giving other details will be sent to AEA members in the United States before January 1, 1962. Awards will be announced not later than March 1st.

Announcements

The Social Systems Research Institute of the University of Wisconsin, Guy H. Orcutt, director, announces a reprint series that will report on the work of the Institute and of the members of its staff. The Social Systems Research Institute seeks to achieve increased predictive ability in the social sciences by means of the construction and utilization of realistic, detailed working models of the U.S. economy and other socioeconomic systems. Those interested in receiving regular announcements of available reprints should write to Professor Gerald Somers, Social Systems Research Institute, Sterling Hall, University of Wisconsin, Madison 6, Wisconsin.

The Cooperative Research and Demonstration Grant Program of the Social Security Administration provides support for research of significance to social security programs and social welfare. The purpose is to add to existing knowledge or devise and evaluate new methods of applying knowledge with regard to such problems as "the prevention and reduction of dependency . . . coordination of planning between private and public welfare agencies" or improvement in "the administration and effectiveness of programs carried on or assisted under the Social Security Act and programs related thereto. Grants may be made to public agencies and other non-profit organizations. Grants are not available to individuals. The program is administered by the Research Grants Branch, Division of Program Research, Office of the Commissioner, Social Security Administration.

Deaths

William F. Bristol, State University of Iowa, May 30, 1961.

Frank T. Carlton, Case Institute of Technology.

Leslie T. Fournier, Ridgewood, New Jersey, July 5, 1961.

Julius Hirsch, New York City, October 14, 1960.

Don D. Lescohier, emeritus professor, University of Wisconsin, August 27, 1961.

Retirements

Alvin K. Aster, New York University, August 1961.

William A. Berridge, Metropolitan Life Insurance Company, August 1961.

William F. Connelly, New York University, August 1961.

George D. Halsey, University of South Carolina, June 1961.

Edmund D. McGarry, professor emeritus, University of Buffalo, July 1961.

Margaret G. Reid, University of Chicago, September 1961.

Olin G. Saxon, Yale University, June 1961.

W. Bayard Taylor, Claremont Men's College.

James B. Williams, University of South Carolina, June 1961.

mittee members and the chairman may be called upon for information about Census data and policies. Members of the Association who are interested in the work of the Advisory Committee are invited to consult with members of the Committee.

INTERNATIONAL ECONOMIC HISTORY CONFERENCE

The second International Economic History Conference will be held at Aix-en-Provence, France, August 29 to September 4, 1962. The executive secretaries of the conference are P. Mathias, Queens' College, Cambridge University and Madame D. Cassella, École des Hautes Études, Paris. One of the four plenary sessions will be given up to discussion of and planning for the proposed International Economic History Association. Subjects of the other sessions will be: (1) Agrarian Problems of Under-developed Societies in the Light of European Agrarian History, (2) Rents, Profits, Investment and the Rate of Interest, and (3) Industrial Development and the Working Classes.

Sections meetings will be held on the following themes: (1) Trade and Politics in the Ancient World, (2) Medieval Economy: Problems of Capital Formation, Agrarian Development of Medieval Italy, Agriculture in the Slavonic Regions, (3) Historical Problems of Population and Economic Growth, (4) History of Prices and Economic Fluctuations, (5) Agrarian History of the Modern Era: Government Policy, Credit, Cooperatives and Collective Forms of Production, (6) Rural Industries and Artisans, (7) Typology of Industrialization, (8) Capital Formation in the Early Stages of Industrialization, and (9) Historical Problems of Colonial Development.

The closing date for registration is May 31, 1962. For details with respect to registration, accommodations, and publications, communications should be addressed to *International Conference*, c/o Professor G. Duby, Faculté des Lettres, l'Université, Aix-en-Provence, (B. du Rh.), France.

NATIONAL HONOR SOCIETY IN ECONOMICS

Omicron Chi Epsilon, national honor society in economics, was founded in 1956 by students at the City College of New York in order to stimulate interest in economics and provide a means of conferring honors on the more promising students working in this field. The society provides a forum for academic intercourse between graduate and undergraduate students of economics across the country. A national convention of member chapters is held annually. There are active chapters of Omicron Chi Epsilon, as of June 1961, at 24 institutions of higher learning within the United States.

A journal, *The American Economist*, is provided semi-annually. Its purpose is (1) to provide an outlet for meritorious essays by graduate and undergraduate students, and (2) to provide a means of acquainting would-be economists, particularly undergraduates contemplating a career in economics, with some idea of modern developments in pure and applied economics.

Further information concerning the society may be obtained from John D. Guilfoil, 1961-62 national president, at 36-03-21 Avenue, Astoria 5, N.Y. Correspondence concerning *The American Economist* should be directed to the managing editor, Alan Canter, 218-33 100 Avenue, Queens Village, N.Y.

FELLOWSHIPS FOR REGIONAL FACULTY RESEARCH SEMINARS IN ECONOMICS

The Ford Foundation announces six Regional Research Seminars in Economics to be held in the summer of 1962 for an eight-week period. Participation is open on a competitive basis to faculty members teaching economics or business subjects at four-year institutions of higher learning that do not offer a doctorate in economics. It is the purpose of the program to enhance the effectiveness of teaching and to encourage research studies of significance.

The regions, directors, and subject areas will be the following: I, Northeast, Joseph S. Berliner, Syracuse University, "The Soviet Economy"; II, Southeast, D. Rutledge Vining, University of Virginia, "Political Economy and Public Policy"; III, Middle West, Richard

NOTES

Members who wish to make suggestions for officers of the American Economic Association for 1962-63 are asked to place names with James Washington Bell, secretary of the Association, for transmission to the Nominating Committee, which will be appointed by the incoming president, Edward S. Mason.

NATIONAL TASK FORCE ON ECONOMIC EDUCATION

In July 1960, by the joint action of the Committee for Economic Development and the American Economic Association, the National Task Force on Economic Education was established. The primary mission of the Task Force was to describe the minimum understanding of economics essential for good citizenship and attainable by high school students, with the object of providing helpful guidance for high school teachers, administrators, and school boards.

Once created, the Task Force became completely independent of the two organizations responsible for its creation. Its findings are subject to review by no agency or organization; nor is either of the sponsoring organizations responsible for the findings.

The members of the Task Force are: G. L. Bach (chairman), A. A. Bellack, L. V. Chandler, M. L. Frankel, R. A. Gordon, B. W. Lewis, P. A. Samuelson, and F. A. Bond. Bellack is professor of education, Teachers College, Columbia University; and Frankel is director, Joint Council on Economic Education; the others are economists.

The report of the Task Force, entitled *Economic Education in the Schools*, has now been completed and copies of the report can be obtained from the Committee for Economic Development, 711 Fifth Avenue, New York 22, N.Y., at \$1 each (with discounts on large purchases). The CED has published a short summary of the report, available for 35 cents a copy.

REPORT OF THE CENSUS ADVISORY COMMITTEE OF THE AMERICAN ECONOMIC ASSOCIATION

The Committee was established as a result of resolutions adopted at 1959 meetings of the Executive Committee of the American Economic Association, in which it was stated that "... it would be highly desirable for economists as a group to be able to advise the Bureau of the Census through a formal AEA Advisory Committee. ..." Its first meeting with the director and executive staff of the Census Bureau was held in April 1960; subsequent meetings were in November 1960 and May 1961. The initial membership of the Committee, in addition to the chairman, Solomon Fabricant, consisted of Harold Barger, Millard Hastay, H. Gregg Lewis, John Lintner, and Anthony Tang. Morris A. Adelman, Donald J. Daly, Victor Fuchs, and Frank E. Morris attended the second meeting as co-opted members. The regular membership of the Committee has been enlarged by the appointment of Morris A. Adelman, Edward F. Denison, Carl Kaysen, and Arthur Okun.

The principal topics discussed have been: The Census Bureau's long-range economic statistics program; the Census Bureau's "Report on Business Cycle Development"; statistical needs in relation to area redevelopment and economic growth programs; and price-cost indexes. At future meetings topics for discussion will include: the Census of Transportation; the content of the Census of Manufactures and Mineral Industries; a possible Census of Wealth; value-added statistics in the Census of Business; foreign-trade statistics programs; the 1962 Census of Government; and principles for the determination of statistical priorities.

The Committee wishes to bring to the attention of members of the Association the fact that the Census Bureau for many years has cooperated with economists and others by providing, at cost, tabulations of data supplementary to those regularly published. Requests for such tabulations may be made directly to the Bureau of the Census but Com-

- ESENWEIN-ROTHE, I. Neuere Literatur zur theoretischen und politischen Bevölkerungswissenschaft. *Jahrb. f. Sozialwissensch.*, 1961, 12 (1), pp. 101-17.
- GLEASON, A. H. The social adequacy method of international level of living comparisons as applied to Japan and the United States. *Jour. Econ. Behavior* (Tokyo), Apr. 1961, pp. 3-20.
- JØRGENSEN, E. Aspekter af befolkningsproblemet. *Økon. og Pol.*, 1961, 35 (1), pp. 28-46.
- MINAMI, R. An analysis of Malthus' population theory: with Comments by M. Tachi and T. Yoshida. *Jour. Econ. Behavior* (Tokyo), Apr. 1961, pp. 53-66.
- RIBAS, J. J. Observations on the financing of social security in the Common Market countries. *Internat. Lab. Rev.*, July-Aug. 1961, pp. 26-49.
- TELLERIA, L. O. La experiencia migratoria venezolana. *Jour. Órgano de difusión Sindicalista* (Madrid), Mar.-Apr. 1961, pp. 230-97.
- VON UNGERN-STERNBERG, R. Eine Diagnose des derzeitigen Zustandes der Weltbevölkerung. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 241-57.
- De la prévision démographique et des problèmes qu'elle soulève. *Études de Comptabilité Nat.*, Apr. 1960, pp. 41-56.
- L'exode rural. *Études de Comptabilité Nat.*, Apr. 1960, pp. 57-130.

Related Disciplines

- VICKREY, W. Risk, utility, and social policy. *Soc. Research*, Summer 1961, pp. 205-17.
- WILSON, J. Q. The economy of patronage. *Jour. Pol. Econ.*, Aug. 1961, pp. 369-80.
- YOTOPOULOS, P. A. Institutional affiliation of the contributors to three professional journals. *Am. Econ. Rev.*, Sept. 1961, pp. 665-701.

- PASTO, J. K. The role of farm management in underdeveloped countries. *Jour. Farm Econ.*, Aug. 1961, pp. 606-15.
- SCHLOTTER, H.-G. Produktionsregulative Agrarsubventionen. *Jahrb. f. Nationalök. und Stat.*, July 1961, pp. 241-68.
- TALBOT, R. B. Farm legislation in the 86th Congress. *Jour. Farm Econ.*, Aug. 1961, pp. 582-605.
- WALRATH, A. J. Title to land. *Jour. Farm Econ.*, Aug. 1961, pp. 616-25.

Labor Economics

- ARONSON, R. L. Labour commitment among Jamaican bauxite workers. *Soc. Econ. Stud.*, June 1961, pp. 156-82.
- EBERHART, E. K. Work stoppages in the United States and New Zealand. *Econ. Record*, June 1961, pp. 140-56.
- GROOM, P. P. Retraining the unemployed, I—European government programs. *Mo. Lab. Rev.*, Aug. 1961, pp. 823-28.
- HILL, T. P. AND KNOWLES, K. G. J. C. Wages in coal mining. *Bull. Oxford Univ. Inst. Stat.*, May 1961, pp. 135-52.
- JOHNSON, D. B. Prevailing wage legislation in the States. *Mo. Lab. Rev.*, Aug. 1961, pp. 839-45.
- LEITER, R. D. Organized labor and the tariff. *So. Econ. Jour.*, July 1961, pp. 55-65.
- LESTER, R. A. Implications of labor force developments for unemployment benefits. *Econ. and Bus.*, May 1961, pp. 47-56.
- MAHONEY, T. A. Factors determining the labor-force participation of married women. *Indus. Lab. Rel. Rev.*, July 1961, pp. 563-77.
- MANN, J. K. Private and governmental plans for the adjustment of interunion disputes: work assignment conflict to 1949. *Stanford Law Rev.*, Dec. 1960, pp. 5-59.
- MEREDITH, J. L. Long-term unemployment in the United States. *Mo. Lab. Rev.*, June 1961, pp. 601-10.
- MILLER, W. L. Slavery and the population of the South. *So. Econ. Jour.*, July 1961, pp. 46-54.
- MITTENTHAL, R. Past practice and the administration of collective bargaining agreements. *Mich. Law Rev.*, May 1961, pp. 1017-42.
- PRESSAT, R. Vues sur la planification de la main-d'oeuvre en Union Soviétique. *Population*, Apr.-June 1961, pp. 235-48.
- RAY, N. C. Wage policy in a planned economy. *Asian Econ. Rev.*, May 1961, pp. 263-72.
- RIVA-SANSEVERINO, L. The influence of international labour conventions on Italian labour legislation. *Internat. Lab. Rev.*, June 1961, pp. 576-601.
- SAUVY, A. Les perspectives d'accroissement du nombre des emplois en France d'ici 1975. *Population*, Apr.-June 1961, pp. 197-220.
- SCHULTZ, T. W. A policy to redistribute losses from economic progress. *Jour. Farm Econ.*, Aug. 1961, pp. 554-65.
- TURNER, H. A. AND BESCOBY, J. Strikes, redundancy and the demand cycle in the motor car industry. *Bull. Oxford Univ. Inst. Stat.*, May 1961, pp. 179-86.
- VATTER, H. G. On the folklore of the backward-sloping supply curve. *Indus. Lab. Rel. Rev.*, July 1961, pp. 578-86.
- WEISZ, M. The United States Labour-Management Reporting and Disclosure Act, 1959: its background and early operation. *Internat. Lab. Rev.*, July-Aug. 1961, pp. 75-100.

Population; Welfare Programs; Consumer Economics

- BALDI, G. M. L'uomo protetto nella società. *Riv. di Pol. Econ.*, July 1961, pp. 1494-1507.
- DREYER, H. M. Immigration of foreign workers into the Federal Republic of Germany. *Internat. Lab. Rev.*, July-Aug. 1961, pp. 1-25.

- FOLDES, L. Domestic air transport policy—II. *Economica*, Aug. 1961, pp. 270-85.
- FUENTES DELGADO, R. Competencia y coordinación entre los sistemas de transporte. *Investigación Econ.*, 1961, 21 (1), pp. 3-24.
- GRASSINI, F. A. Appunti sulle imprese pubbliche. *Studi Econ.*, Jan.-Apr. 1961, pp. 24-59.
- HEUSS, E. Bemerkungen zum Vorentwurf eines Bundesgesetzes über das Filmwesen. *Wirtschaft und Recht*, 1961, 13 (2), pp. 108-19.
- HOBBS, A. B. Relevant market problems in FTC merger cases on review in the courts. *Antitrust Bull.*, Mar.-Apr. 1961, pp. 125-30.
- KEYES, L. S. The Bethlehem-Youngstown Case and the market-share criterion. *Am. Econ. Rev.*, Sept. 1961, pp. 643-56.
- MOHRING, H. Land values and the measurement of highway benefits. *Jour. Pol. Econ.*, June 1961, pp. 236-49.
- SAAVEDRA MOTA, M. Integración del Ferrocarril Mexicano al sistema de los Ferrocarriles Nacionales de México. Conclusión. *Investigación Econ.*, 21 (2), pp. 361-88.
- STEELE, C. A. Long range physical and financial planning for highways: II. *Bus. and Gov. Rev.*, Univ. Missouri, July-Aug. 1961, pp. 11-33.
- TILMANT, M. Les compagnies aériennes du marché commun au seuil d'Air-Union. *Annales de Sci. Econ. Appliquées*, July 1961, pp. 279-314.
- WILDAVSKY, A. TVA and power politics. *Am. Pol. Sci. Rev.*, Sept. 1961, pp. 576-90.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BANDERA, V. N. Ein einfaches Regressionsmodell für die Wertschöpfung der Landwirtschaft. (With English summary.) *Ifo-Studien*, 1960, 6 (1/2), pp. 61-67.
- BERENBAU, M. El desarrollo de la agricultura Argentina. (With English summary.) *Desarrollo Econ. (Argentina)*, Apr.-June 1961, pp. 115-36.
- BOEV, V. Differential rent and the problem of prices of collective farm products. *Prob. Econ.*, July 1961, pp. 34-42.
- BREWER, M. F. Local government assessment: its impact on land and water use. *Land Econ.*, Aug. 1961, pp. 207-18.
- CLODIUS, R. L. AND MUELLER, W. F. Market structure analysis as an orientation for research in agricultural economics. *Jour. Farm Econ.*, Aug. 1961, pp. 515-53.
- CORNISH, R. J. AND HEMPEL, J. A. The agricultural policy of the European economic community. *Quart. Rev. Agric. Econ.*, Apr. 1961, pp. 64-78.
- DAVIS, O. A. AND WHINSTON, A. B. Economics of urban renewal. *Law and Contemp. Problems*, Winter 1961, pp. 105-17.
- DELL'AMORE, G. Il credito agrario a una svolta. *Risparmio*, June 1961, pp. 1045-64.
- GARINO CANINA, A. Considerazioni sul problema dell'agricoltura italiana nella Comunità Economica Europea. (With English summary.) *Risparmio*, Apr. 1961, pp. 631-47.
- HEADY, E. O. Public purpose in agricultural research and education. *Jour. Farm Econ.*, Aug. 1961, pp. 566-81.
- HINOJOSA ORTIZ, M. Reflexiones sobre una política agraria. *Investigación Econ.*, 1961, 21 (2), pp. 211-34.
- JOHNSTON, B. F. AND MELLOR, J. W. The role of agriculture in economic development. *Am. Econ. Rev.*, Sept. 1961, pp. 566-93.
- MANTEL, K. Der Standort der Forstwirtschaft in der Thünenschen Theorie. *Schmollers Jahrb.*, 1961, 81 (3), pp. 43-60.
- NICHOLLS, W. H. Industrialization, factor markets, and agricultural development. *Jour. Pol. Econ.*, Aug. 1961, pp. 319-40.
- PANSE, V. G. AND MENON, V. S. Index numbers of agricultural production in India. *Indian Jour. Agric. Econ.*, Apr.-June 1961, pp. 18-36.

- AMORSO, L. Si livellano i valori azionari al saggio di interesse di mercato. (With English summary.) *Econ. Internaz.*, May 1961, pp. 189-97.
- COX, E. B. Changes in the size distribution of dividend income. *Jour. Am. Stat. Assoc.*, June 1961, pp. 250-59.
- GALLOTTI, R. Los fondos o sociedades de inversión mobiliaria. *Moneda y Crédito*, Dec. 1960, pp. 23-64.
- HAMOIR, E. Technique de l'assurance-incendie. *Annales de Sci. Econ. Appliquées*, July 1961, pp. 317-35.
- JAMES, J. V. Management planning of capital allocations to business activities. *N.A.A. Bull.*, Sept. 1961, pp. 5-15.
- LIVINGSTON, W. G. and BROWN, R. C. Why measure return on capital? *N.A.A. Bull.*, Sept. 1961, pp. 17-26.
- LORUSSO, E. Evoluzione nelle istruttorie per finanziamenti a medio e a lungo termine. *Influsso della dottrina dello Zappa*. *Risparmio*, June 1961, pp. 1065-1112.
- MCKINLEY, G. W. Life insurance company lending to small business. *Jour. Finance*, May 1961, pp. 291-303.
- ORTNER, R. An estimate of the time horizon and expected yield for a selected group of common shares, 1935-1955. *Internat. Econ. Rev.*, May 1961, pp. 179-98.
- PAUKERT, F. The value of Stock Exchange transactions in non-government securities, 1911-1959. *Economica*, Aug. 1961, pp. 303-9.
- QUIRK, J. P. The capital structure of firms and the risk of failure. *Internat. Econ. Rev.*, May 1961, pp. 210-28.

Business Organization; Managerial Economics; Marketing; Accounting

- COLE, H. J. D., HOLLAND, D. G., POSNER, M. V. Factory productivity and efficiency. *Bull. Oxford Univ. Inst. Stat.*, May 1961, pp. 105-34.
- DISNEY, R. L. A review of inventory control theory. *Engineering Econ.*, Summer 1961, pp. 1-33.
- EASTERFIELD, T. E. Aims and methods in productivity measurement at plant level. *Prod. Meas. Rev.*, Feb. 1961, pp. 5-19.
- HENDRIKSON, K. Inter-firm comparisons at equal levels of utilisation—new ways of increasing efficiency. *Prod. Meas. Rev.*, Feb. 1961, pp. 31-59.
- HONKO, J. Investoinnin tuottoprosentti liikkeejohdon tehokkuuden mittana. (With English summary.) *Liiketaloudellinen Aikakauskirja*, 1961, 1, pp. 6-22.
- PHELPS, D. M. Soviet marketing—stronger than we think. *Harvard Bus. Rev.*, July-Aug. 1961, pp. 69-80.
- POLLARD, S. and HUGHES, J. D. Costs in retail distribution in Great Britain, 1950-7. *Oxford Econ. Papers*, June 1961, pp. 166-83.
- QUINN, J. B. Long-range planning of industrial research. *Harvard Bus. Rev.*, July-Aug. 1961, pp. 88-102.
- SOLOMONS, D. Economic and accounting concepts of income. *Accounting Rev.*, July 1961, pp. 374-83.
- THONSTAD, T. and JOCHEMS, D. B. The influence of entrepreneurial expectations and appraisals on production planning: an econometric study of the German leather and shoe industries. *Internat. Econ. Rev.*, May 1961, pp. 135-53.

Industrial Organization; Government and Business; Industry Studies

- BELLON, P. Marine marchande et pays en voie de développement économique. *Rev. Econ.*, July 1961, pp. 596-644.
- BOAS, C. W. Locational patterns of American automobile assembly plants, 1895-1958. *Econ. Geog.*, July 1961, pp. 218-30.

- HOLLERMAN, L. The logistic view versus the national income view of foreign trade dependence, with special reference to Japan. *Hitotsubashi Jour. Econ.*, Oct. 1960, pp. 52-58.
- JONES, R. W. Comparative advantage and the theory of tariffs: a multi-country, multi-commodity model. *Rev. Econ. Stud.*, June 1961, pp. 161-75.
- . Stability conditions in international trade: a general equilibrium analysis. *Internat. Econ. Rev.*, May 1961, pp. 199-209.
- KONRAD, A. Leistungsbilanzsalden und Einkommenskreislauf (With English summary.) *Ifo-Studien*, 1960, 6 (1/2), pp. 117-39.
- KUMAR, R. The concept of compensatory official financing: a restatement for balance-of-payments policy. *Econ. Internaz.*, May 1961, pp. 231-54.
- MENGSHOEL, R. Utviklingen innen seksmaktssamarbeidet. Spørsmål av særlig interesse for de ytre syv. *Økonomi*, May 1961, pp. 3-111.
- MONASTRA, F. La Banca Europea per gli Investimenti: struttura e funzionamento. (With English summary.) *Risparmio*, May 1961, pp. 851-904.
- MUNDELL, R. A. The international disequilibrium system. *Kyklos*, 1961, 14 (2), pp. 153-72.
- . A theory of optimum currency areas. *Am. Econ. Rev.*, Sept. 1961, pp. 657-64.
- OHLIN, B. Utrikeshandelsteorin—ett försök till "Ehrenrettung." (The theory of international trade—an attempt to "Ehrenrettung.") *Ekon. Tids.*, June 1961, pp. 73-92.
- POLAK, J. J. De onderscheiding tussen interne en externe inflatoire factoren. *De Economist*, June 1961, pp. 385-95.
- RÜSTOW, H.-J. Leistungsbilanz und Wirtschaftswachstum. (With English summary.) *Ifo-Studien*, 1960, 6 (1/2), pp. 75-114.
- SÖDERSTEN, B. Utrikeshandel och ekonomisk tillväxt. Den marginella aspekten. (International trade and economic growth. The marginal aspect.) *Ekon. Tids.*, June 1961, pp. 113-28.
- SOUTHARD, F. A., JR. United States experience. *Jour. Finance*, May 1961, pp. 176-85.
- SVENDSEN, K. E. Notes on the economic relations between the East European countries. *Statsøkon. Tids.*, Mar. 1961, pp. 18-33.
- TORRES MANZO, C. El GATT o el acuerdo general sobre aranceles aduaneros y comercio. *Investigacion Econ.*, 1961, 21 (1), pp. 25-40.
- VAN CISE, J. G. The application of the U.S. antitrust laws to the European community. *Antitrust Bull.*, Mar.-Apr. 1961, pp. 145-72.
- VENKATARAMANI, M. S. Oil and US foreign policy during the Suez crisis 1956-7. *Internat. Stud.*, Oct. 1960, pp. 105-52.
- WAHL, D. F. Capital and labour requirements for Canada's foreign trade. *Can. Jour. Econ. Pol. Sci.*, Aug. 1961, pp. 349-58.
- WITTMAYER, H. "Net production values" and industrial structure in international comparisons. *Prod. Meas. Rev.*, Feb. 1961, pp. 20-30.
- WOOD, R. C. Postwar experience in Europe. *Jour. Finance*, May 1961, pp. 157-66.
- The European economic community and Greece. *Com. Market*, May 1961, pp. 97-105.
- Exports and wages: the case of Japan: by the Economic Research Section, Economic Bureau, Ministry of Foreign Affairs, Japan. *Jour. Econ. Behavior* (Tokyo), Apr. 1961, pp. 21-38.
- Twelfth Colombo Plan Consultative Committee meeting in Tokyo. *Asian Affairs*, Jan. 1961, pp. 1-62.

Business Finance; Investment and Security Markets; Insurance

- ACCIAIO, A. Gli impieghi in titoli nelle Casse di Risparmio italiane. *Risparmio*, June 1961, pp. 1113-44.
- ANDREWS, V. L. The supply of loanable funds from non-insured corporate, state-, and city-administered employee pension trusts. *Jour. Finance*, May 1961, pp. 328-50.

Public Finance; Fiscal Policy

- ALLORIO, E. Etude comparée du contentieux fiscal. *Rev. Sci. Fin.*, July 1961, pp. 408-22.
- BRISSAT, C. Justification de l'impôt sur l'énergie. *Rev. Sci. Fin.*, July 1961, pp. 451-63.
- CADOUX, CH. Du consentement de l'impôt. *Rev. Sci. Fin.*, July 1961, pp. 423-50.
- FORTE, F. Il problema della scelta del tipo d'imposizione sulle vendite: l'imposta a cascata. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, July 1961, pp. 601-38.
- GANGULI, B. N. The States' indebtedness to the Union Government: a study in principles of public debt management. *Indian Econ. Rev.*, Aug. 1960, pp. 142-58.
- HARRISS, C. L. Le problème des subventions aux Etats-Unis. *Rev. Sci. Fin.*, July 1961, pp. 375-91.
- NEVIN, E. British public debt policy—rapport anglais. *Pub. Fin./Fin. Publiques*, 1961, 16 (1), pp. 27-49.
- NORTON, P. T., JR. Effects of obsolescence on tax depreciation practice. *Engineering Econ.*, Summer 1961, pp. 34-45.
- PEN, J. Begrotingsprocedure en comptabiliteitswet. *De Economist*, June 1961, pp. 410-24.
- ROLPH, E. R. Debt management: some theoretical aspects—rapport américain. *Pub. Fin./Fin. Publiques*, 1961, 16 (1), pp. 105-20.
- WEDENBAUM, M. L. The economic impact of the government spending process. *Bus. Rev.*, Univ. Houston, Spring 1961, pp. 4-47.

International Economics

- ALEMANN, R. T. Monetary stabilization in Latin America. *Jour. Finance*, May 1961, pp. 167-75.
- ALLEN, W. R. The International Monetary Fund and balance of payments adjustment. *Oxford Econ. Papers*, June 1961, pp. 149-65.
- ALTMAN, O. L. Professor Triffin on international liquidity and the role of the fund. Reply by R. Triffin (A brief for the defense). *Internat. Mon. Fund Staff Papers*, May 1961, pp. 151-94.
- AMBJÖRN, E. International payments and the I.M.F. *Skandinav. Bank. Quart. Rev.*, July 1961, pp. 65-73.
- BALASSA, B. Economies of scale in the European Common Market. *Econ. Internaz.*, May 1961, pp. 198-215.
- BINGSWANGER, H. C. Das intra-regionale Gleichgewicht. Zur Integration von Standorttheorie und Theorie des internationalen Handels. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1961, pp. 129-64.
- BURNS, A. F. World competition and the American economy. *Pol. Sci. Quart.*, Sept. 1961, pp. 321-31.
- COLLINGS, F. d'A. Recent progress in Latin America toward eliminating exchange restrictions. *Internat. Mon. Fund Staff Papers*, May 1961, pp. 274-86.
- DE JONG, F. J. Regionale economische integratie. *Tijdschrift v. Econ.*, 1961, 6 (2), pp. 139-65.
- DENIS, H. Croissance industrielle et commerce extérieur. *Rev. d'Econ. Pol.*, Mar.-Apr. 1961, pp. 165-88.
- GARDNER, W. R. An exchange-market analysis of the U.S. balance of payments. *Internat. Mon. Fund Staff Papers*, May 1961, pp. 195-211.
- HARROD, R. Liquidity. (With Italian translation.) *Riv. di Pol. Econ.*, July 1961, pp. 1429-67.
- . Möglichkeiten zur Erhöhung der internationalen Liquidität. *Aussenwirtschaft*, June 1961, pp. 155-72.
- HIGONNET, R. Le protectionnisme fiscal dans le marché commun. *Rev. d'Econ. Pol.*, Mar.-Apr. 1961, pp. 189-204.

- TINTNER, G. The use of stochastic linear programming in planning. *Indian Econ. Rev.*, Aug. 1960, pp. 159-67.
- VON MISES, L. L'élite nella società capitalistica. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, July 1961, pp. 654-61.
- WILLEKE, F.-U. Das Theorem der kumulativen Staatsintervention. *Jahrb. f. Sozialwissensch.*, 1961, 12 (1), pp. 58-79.

Business Fluctuations

- MILLSPAUGH, M. Problems and opportunities of relocation. *Law and Contemp. Problems*, Winter 1961, pp. 6-36.
- THEIL, H. AND JOCHEMS, D. B. Ein Überblick über einige Studien zur Analyse von Konjunkturtestdaten. (With English summary.) *Ifo-Studien*, 1960, 6 (1-2), pp. 7-28.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- BANFI, R. L'evoluzione del sistema bancario sovietico, III. *Pol. d. Scambi*, Mar.-Apr. 1961, pp. 5-20.
- CHIANG, A. C. The short-run effects of instalment credit control. *Can. Jour. Econ. Pol. Sci.*, Aug. 1961, pp. 359-66.
- DAMMANN, A. Norsk selektiv penge- og kredittpolitikk i 1950- årene. *Økonomi*, Aug. 1961, pp. 3-133.
- DELIVANIS, D. J. La contribution du rapport Raddiffe à la théorie de la politique économique. *Rev. d'Econ. Pol.*, Mar.-Apr. 1961, pp. 145-64.
- DIETERLEN, P. Structure de la liquidité et phénoménologie monétaire. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, June 1961, pp. 501-15.
- HENDERSON, R. F. Principles of monetary policy. *Econ. Record*, June 1961, pp. 131-39.
- KAVESH, R. A. AND MACKEY, J. A financial framework for economic growth. *Jour. Finance*, May 1961, pp. 202-25.
- KESSLER, G. A. Vergelijking van twee monetaire modellen. *De Economist*, June 1961, pp. 396-409.
- MORGAN, E. V. Money, liquidity and interest rates. *Lloyds Bank Rev.*, July 1961, pp. 26-38.
- NADLER, P. S. Commercial banking in the sixties. *Jour. Finance*, May 1961, pp. 226-40.
- ORR, D. AND MELLON, W. G. Stochastic reserve losses and expansion of bank credit. *Am. Econ. Rev.*, Sept. 1961, pp. 614-23.
- RIEGERSON, R. L. Monetary policy and the money market. *Jour. Finance*, May 1961, pp. 247-54.
- SAYERS, R. S. Alternative views of central banking. *De Economist*, May 1961, pp. 305-20.
- STORER, R. W. Some factors influencing the monetary economy in the 1960's. *Quart. Rev. Econ. Bus.*, May 1961, pp. 25-35.
- TAKAHASHI, T. An interpretation of the concept of "money rate of interest" in Keynes' theory as the "Grenzbegriff" (concept of limitation) in connection with "own-rate of interest," and its logical character in monetary economy. *Hitotsubashi Jour. Com. and Manag.*, March 1961, pp. 1-10.
- VERRIJN STUART, G. M. Overheid en Centrale Bank. *De Economist*, July-Aug. 1961, pp. 481-99.
- WORRET, F. La politica bancaria come problema di forza. (With English summary.) *Riv. di Internaz. di Sci. Econ. e Com.*, June 1961, pp. 516-33.
- The balance sheet of agriculture, 1961. *Fed. Res. Bull.*, Aug. 1961, pp. 908-16.
- Interest rates in leading countries. *Fed. Res. Bull.*, Aug. 1961, pp. 891-98.

- VEERARAGHAVACHAR, S. M. The problem of capital formation in India. *Asian Econ. Rev.*, May 1961, pp. 273-84.
- WAPENHANS, W. Die Entwicklung der öffentlichen Auslandsverschuldung Griechenlands seit der Begründung seiner nationalen Selbständigkeit. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 201-23.
- WILSON, J. S. G. Economic environment and development programmes. *Yorkshire Bull. Econ. Soc. Research*, May 1961, pp. 5-18.
- Economic growth and social policy in Latin America: the Seventh Conference of American States Members of the I.L.O. *Internat. Lab. Rev.*, July-Aug. 1961, pp. 50-74.
- Economic growth: the last hundred years. *Nat. Inst. Econ. Rev.*, July 1961, pp. 24-49.
- Soviet Agriculture. Eight articles by B. Braginskii and D. Dumnov, N. Lagutin and others. *Prob. Econ.*, May 1961, pp. 3-59.
- Yugoslavia's plan of economic development. *Yugoslav Surv.*, Jan.-Mar. 1961, pp. 467-509.

Statistical Methods; Econometrics; Social Accounting

- BILLETER, E. P. Operations Research und Statistik. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1961, pp. 185-93.
- FELS, E. Grundsätze der kleinsten Quadrate. (With English summary.) *Ifo-Studien*, 1960, 6 (1/2), pp. 31-59.
- GRANGER, C. W. J. First report of the Princeton Economic Time Series Project. *L'industria*, 1961, 2, pp. 194-206.
- JORGENSEN, D. W. Multiple regression analysis of a Poisson process. *Jour. Am. Stat. Assoc.*, June 1961, pp. 235-45.
- KALLINEN, T. Säästäminen ja rahoitustilinpito. (With English summary—Savings and financial accounts.) *Kansantaloudellinen Aikakauskirja*, 1961, 2, pp. 114-24.
- MATTESSICH, R. Budgeting models and system simulation. *Accounting Rev.*, July 1961, pp. 384-97.
- MOL, IR. J., NEUDECKER, H. AND DE VEER, J. De Simplextechniek herbeschouwd. *De Economist*, July-Aug. 1961, pp. 516-32.
- MONTEIL, J. L'administration agrégée de la comptabilité économique. *Rev. Sci. Fin.*, July 1961, pp. 392-407.
- MUNDLAK, Y. Aggregation over time in distributed lag models. *Internat. Econ. Rev.*, May 1961, pp. 154-63.
- RUGGLES, R. Un sistema integrado de contabilidad nacional. (With English summary.) *Desarrollo Econ. (Argentina)*, Apr.-June 1961, pp. 25-33.
- TOCHER, K. D. The role of models in operational research (with discussion). *Jour. Royal Stat. Soc.*, 1961, 124 (2), pp. 121-42.
- ZELLNER, A. Econometric estimation with temporally dependent disturbance terms. *Internat. Econ. Rev.*, May 1961, pp. 164-78.

Economic Systems; Planning and Reform; Cooperation

- DREWNOWSKI, J. The economic theory of socialism: a suggestion for reconsideration. *Jour. Pol. Econ.*, Aug. 1961, pp. 341-54.
- JOHANSEN, L. Economic problems in a rich country: capitalism versus socialism. *Statsøkon. Tids.*, Mar. 1961, pp. 34-52.
- KHACHATUROV, T. Price formation, investment effectiveness and profitability. *Prob. Econ.*, July 1961, pp. 18-25.
- NEMCHINOV, V. Value and price under socialism. *Prob. Econ.*, July 1961, pp. 3-17.
- PROBST, A. Value or price of production in the socialist economy. *Prob. Econ.*, July 1961, pp. 26-33.
- STRUMILIN, S. Differential ground rent under socialism. *Prob. Econ.*, July 1961, pp. 43-57.

- McDONALD, S. L. On the South's recent economic development. *So. Econ. Jour.*, July 1961, pp. 30-40.
- MONTIAS, J. M. Balanced growth and international specialization: a diagrammatic analysis. *Oxford Econ. Papers*, June 1961, pp. 203-20.
- MORRIS, M. D. AND STERN, B. The economic history of India: a bibliographic essay. *Jour. Econ. Hist.*, June 1961, pp. 179-207.
- NAKAYAMA, I. The Japanese economy and the role of the government. *Hitotsubashi Jour. Econ.*, Oct. 1960, pp. 1-12.
- NEWLYN, W. T. "Take-off" considered in an African setting. *Yorkshire Bull. Econ. Soc. Research*, May 1961, pp. 19-32.
- NICHOLLS, W. H. Uma apreciação da economia rural no Brasil. *Agricultura em São Paulo*, May 1961, pp. 1-36.
- NOYOLA, J. F. La Revolución cubana y sus efectos en el desarrollo económico. *El Trimestre Econ.*, July-Sept. 1961, pp. 403-25.
- OHKAWA, K. AND ROSOVSKY, H. On the industrial distribution of national product and labor force during economic growth. *Econ. Rev. (Japan)*, Apr. 1961, pp. 126-32.
- OSABA, W. AND AMARAL, N. Plan decenal de inversiones para el desarrollo del sector agrícola en el Uruguay. (With English summary.) *Desarrollo Econ. (Argentina)*, Apr.-June 1961, pp. 137-71.
- PALOMBA, G. La ricerca dei capitali per lo sviluppo economico. *Rassegna Econ.*, May-Aug. 1961, pp. 312-44.
- PENOUILL, M. Nota su alcuni aspetti teorici della politica di sviluppo territoriale. *Studi Econ.*, Jan.-Apr. 1961, pp. 60-90.
- PERROUX, F. L'idée de progrès devant la science économique de ce temps. *Cahiers L'Inst. de Sci. Econ. Appliquée*, Feb. 1961, pp. 135-46.
- PROCIUK, S. G. The territorial pattern of industrialization in the USSR: a case study in location of industry. *Soviet Stud.*, July 1961, pp. 69-95.
- RANIS, G. AND FEI, J. C. H. A theory of economic development. *Am. Econ. Rev.*, Sept. 1961, pp. 533-65.
- RIMMER, D. Schumpeter and the underdeveloped countries. *Quart. Jour. Econ.*, Aug. 1961, pp. 422-50.
- ROMANIS, A. Relative growth of exports of manufactures of United States and other industrial countries. *Internat. Mon. Fund Staff Papers*, May 1961, pp. 241-73.
- ROUQUET LA GARRIQUE, V. L'évolution économique et la politique financière contemporaine du Maroc. *I. Annales de Sci. Econ. Appliquées*, May 1961, pp. 191-225.
- SAVILLE, J. Some retarding factors in the British economy before 1914. *Yorkshire Bull. Econ. Soc. Research*, May 1961, pp. 51-60.
- SCHNORE, L. F. The statistical measurement of urbanization and economic development. *Land Econ.*, Aug. 1961, pp. 229-46.
- SHINOHARA, M. Growth and the long swing in the Japanese economy. *Hitotsubashi Jour. Econ.*, Oct. 1960, pp. 59-83.
- . Some causes and consequences of economic growth in Japan. *Malayan Econ. Rev.*, Apr. 1961, pp. 32-48.
- STORBECK, D. Das Arbeitskräftepotential als strukturelle Bedingung der wirtschaftlichen Entwicklung in Mitteldeutschland bis 1965. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 224-40.
- TANG, H. S. AND HSIEH, S. C. Land reform and agricultural development in Taiwan. *Malayan Econ. Rev.*, Apr. 1961, pp. 49-54.
- THIEN, T. T. Economic development in South Vietnam, 1954-60. *Malayan Econ. Rev.*, Apr. 1961, pp. 55-80.
- UGARTE, J. L. La planificación central como instrumento de desarrollo económico: condiciones de eficiencia y condiciones de crecimiento. *Rev. de Econ. Pol.*, Jan.-Apr. 1961, pp. 5-55.

- DOWD, D. F. The economic expansion of Lombardy, 1300-1500: a study in political stimuli to economic change. *Jour. Econ. Hist.*, June 1961, pp. 143-60.
- FLUMIANI, A. Sviluppo economico e bilancia dei pagamenti nel terzo piano indiano. (With English summary.) *Pol. d. Scambi*, May-June 1961, pp. 19-32.
- FRISCH, R. Economic planning and the growth problem in developing countries. *Øst-Økon.*, Special No. 1961, pp. 51-74.
- FRISELLA VELLA, G. Puntualizzazioni sulla politica meridionalista. *Giorn. d. Econ.*, Mar.-Apr. 1961, pp. 189-210.
- GITTINGER, J. P. United States policy toward agrarian reform in underdeveloped nations. *Land Econ.*, Aug. 1961, pp. 195-206.
- GIUSTINIANI, P. Come accelerare lo sviluppo economico. *Riv. di Pol. Econ.*, July 1961, pp. 1469-93.
- HALPERIN, M. Growth and crisis in the Latin American economy. *Sci. and Soc.*, Summer 1961, pp. 195-228.
- HANSON, A. H. Development corporations. *Yorkshire Bull. Econ. Soc. Research*, May 1961, pp. 41-50.
- HENDERSON, W. O. Die Struktur der preussischen Wirtschaft um 1786. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 292-319.
- HINNEKENS, L. De financiële betekenis van vervroegde fiscale afschrijving en investeringsaftrek in de Benelux-landen. *Tijdschrift v. Econ.*, 1961, 6 (2), pp. 166-204.
- HUTCHINGS, R. F. D. The origins of the Soviet industrial price system. *Soviet Stud.*, July 1961, pp. 1-22.
- HUTTON, G. The U.K. economy 1951-61: performance and prospect. *Lloyds Bank Rev.*, July 1961, pp. 1-25.
- ITAGAKI, Y. Some notes on the controversy concerning Boeke's "Dualistic Theory": implications for the theory of economic development in underdeveloped countries. *Hitotsubashi Jour. Econ.*, Oct. 1960, pp. 13-28.
- JASNY, N. A note on rationality and efficiency in the Soviet economy: II. *Soviet Stud.*, July 1961, pp. 35-68.
- KASER, M. Economic development in the Soviet Union and Eastern Europe, with special reference to statistics. *Øst-Økon.*, Special No. 1961, pp. 6-18.
- KHILNANI, K. R. F. L'India di fronte al Terzo Piano Quinquennale. (With English summary.) *Pol. d. Scambi*, May-June 1961, pp. 5-18.
- KOJIMA, K. Economic development and import dependence in Japan. *Hitotsubashi Jour. Econ.*, Oct. 1960, pp. 29-51.
- KÜNG, E. Kapitalbildung und Wirtschaftswachstum. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1961, pp. 165-84.
- LAMBERT, P. La notion de progrès économique. *Cahiers L'Inst. de Sci. Econ. Appliquée*, Feb. 1961, pp. 169-80.
- LERDAU, E. Indicators for the national accounts in underdeveloped countries. *Kyklos*, 1961, 14 (2), pp. 199-212.
- LEWIS, W. A. Education and economic development. *Soc. Econ. Stud.*, June 1961, pp. 113-27.
- MACDOUGALL, G. D. A. India's balance of payments. *Bull. Oxford Univ. Inst. Stat.*, May 1961, pp. 153-78.
- MARRAMA, V. Développement, croissance, progrès. *Cahiers L'Inst. de Sci. Econ. Appliquée*, Feb. 1961, pp. 157-68.
- . Equilibrio e squilibrio nello sviluppo e nella programmazione. *Rassegna Econ.*, May-Aug. 1961, pp. 199-233.
- MASTER, M. A. External assistance for Five Year Plans. *Asian Econ. Rev.*, May 1961, pp. 211-35.
- MAYNARD, G. Inflation and growth: some lessons to be drawn from Latin-American experience. *Oxford Econ. Papers*, June 1961, pp. 184-202.

- OTT, A. E. Über die Gleichgewichtsbedingungen in einer wachsenden Wirtschaft. *Jahrb. f. Nationalök. und Stat.*, July 1961, pp. 229-40.
- PHELPS, E. The golden rule of accumulation: a fable for growthmen. *Am. Econ. Rev.*, Sept. 1961, pp. 638-42.
- PRAS, S. J. Some mathematical notes on the quantity theory of money in an open economy. *Internat. Mon. Fund Staff Papers*, May 1961, pp. 212-26.
- QAYUM, A. Die Wahl einer optimalen Technik. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 193-200.
- ROBINSON, D. E. The economics of fashion demand. *Quart. Jour. Econ.*, Aug. 1961, pp. 376-98.
- SHUBIK, M. Objective functions and models of corporate optimization. *Quart. Jour. Econ.*, Aug. 1961, pp. 345-75.
- STIGLER, G. J. The economics of information. *Jour. Pol. Econ.*, June 1961, pp. 213-25.
- TALAMONA, M. Teoria dell'organizzazione, analisi microeconomica e teoria dell'oligopolio. (With English summary.) *L'industria*, 1961, 2, pp. 207-45.
- TUCKER, G. S. L. Ricardo and Marx. *Economica*, Aug. 1961, pp. 252-69.
- WILLGERODT, H. Marktsplattungen. *Kyklos*, 1961, 14 (2), pp. 173-98.
- ZACCAONINI, E. Gradus ad Parnassum. IV. *Giorn. d. Econ.*, Mar.-Apr. 1961, pp. 147-74.

Economic History; Economic Development; National Economies

- ALIENES UROSA, J. Desarrollo económico y relación inter-sectores. Un análisis cuantitativo. *Moneda y Crédito*, Dec. 1960, pp. 3-22.
- ANDIC, S. AND PEACOCK, A. T. The international distribution of income, 1949 and 1957. *Jour. Royal Stat. Soc.*, 1961, 124 (2), pp. 206-18.
- BARAN, P. A. Reflexiones sobre la Revolución cubana. *El Trimestre Econ.*, July-Sept. 1961, pp. 383-402.
- BARKER, R. J. French entrepreneurship during the Restoration: the record of a single firm, the Anzin Mining Company. *Jour. Econ. Hist.*, June 1961, pp. 161-78.
- BERG, E. J. Backward-sloping labor supply functions in dual economies—the Africa case. *Quart. Jour. Econ.*, Aug. 1961, pp. 468-92.
- BETHEL, J. Some national income aggregates for Jamaica, at constant prices. *Soc. Econ. Stud.*, June 1961, pp. 128-55.
- BIEDA, K. Professor Hansen and the economics of the Soviet challenge. *Econ. Record*, June 1961, pp. 157-70.
- BOULDING, K. E. Qu'est-ce que le progrès économique? *Cahiers L'Inst. de Sci. Econ. Appliquée*, Feb. 1961, pp. 147-56.
- BROWN, A. J. Economic separatism versus a common market in developing countries. *Yorkshire Bull. Econ. Soc. Research*, May 1961, pp. 33-40.
- CAIRNCROSS, A. K. International trade and economic development. *Economica*, Aug. 1961, pp. 235-51.
- CARDOSO PEDRAO, F. La distribución de la renta y el desarrollo económico. (With English summary.) *Desarrollo Econ. (Argentina)*, Apr.-June 1961, pp. 35-114.
- CHANDAVARKAR, A. G. The nature and effects of gold hoarding in underdeveloped economies. *Oxford Econ. Papers*, June 1961, pp. 137-48.
- CORDEN, W. M. A brief review of some theories of economic growth. *Malayan Econ. Rev.*, Apr. 1961, pp. 1-12.
- DIRLAM, J. B. AND THORKELOSON, H. J. Implications of the individualist theory of invention. *Antitrust Bull.*, Mar.-Apr. 1961, pp. 173-82.
- DOBB, M. Operational aspects of the Soviet economy. *Øst-Økon.*, Special No. 1961, pp. 19-34.
- . Some problems in the theory of growth and planning policy. *Kyklos*, 1961, 14 (2), pp. 135-52.

- EISNER, R. AND STROTZ, R. H. Flight insurance and the theory of choice. *Jour. Pol. Econ.*, Aug. 1961, pp. 355-68.
- FESS, P. E. The theory of manufacturing costs. *Accounting Rev.*, July 1961, pp. 446-53.
- FJELDSTED, B. L. Schätzung einer amerikanischen Konsumfunktion mit reduzierter Form und kleinsten Quadraten. (With English summary.) *Ifo-Studien*, 1960, 6 (3/4), pp. 69-73.
- FLEMING, J. M. AND BOISSONNEAULT, L. Money supply and imports. *Internat. Mon. Fund Staff Papers*, May 1961, pp. 227-40.
- FOLDES, L. Imperfect capital markets and the theory of investment. *Rev. Econ. Stud.*, June 1961, pp. 182-95.
- GENOVESE, F. C. The methodology of the price support program for wheat. *So. Econ. Jour.*, July 1961, pp. 22-29.
- GOMMERS, P. H. Government expenditure policy and micro multiplier effects. *Econ. Internaz.*, May 1961, pp. 216-30.
- GRAY, R. W. The search for a risk premium. *Jour. Pol. Econ.*, June 1961, pp. 250-60.
- GRAZIANI, A. Il rapporto capitale-prodotto nell'economia italiana: aspetti teorici e risultati statistici. *Giorn. d. Econ.*, Mar.-Apr. 1961, pp. 211-44.
- GREEN, H. A. J. Direct additivity and consumers' behaviour. *Oxford Econ. Papers*, June 1961, pp. 132-36.
- HANSEN, B. Om stock och flow i ekonomisk teori. (Stock and flow in economic theory.) *Ekon. Tids.*, June 1961, pp. 129-49.
- HOOVER, C. B. On the inequality of the rate of profit and the rate of interest. *So. Econ. Jour.*, July 1961, pp. 1-12.
- HUGHES, R. B., JR. Interregional income differences: self-perpetuation. *So. Econ. Jour.*, July 1961, pp. 41-45.
- JOHNS, B. L. AND HOGAN, W. P. Theory of the growth of the firm. *Econ. Record*, June 1961, pp. 171-82.
- KLATT, S. Die Qualität als Objekt der Wirtschaftswissenschaft. *Jahrb. f. Sozialwissensch.*, 1961, 12 (1), pp. 19-57.
- KRUTILLA, J. V. Welfare aspects of benefit-cost analysis. *Jour. Pol. Econ.*, June 1961, pp. 226-35.
- KUENNE, R. E. Keynes's identity, Ricardian virtue, and the partial dichotomy. *Can. Jour. Econ. Pol. Sci.*, Aug. 1961, pp. 323-36.
- MALINVAUD, E. The analogy between atemporal and intertemporal theories of resource allocation. *Rev. Econ. Stud.*, June 1961, pp. 143-60.
- MALMGREN, H. B. Information, expectations and the theory of the firm. *Quart. Jour. Econ.*, Aug. 1961, pp. 399-421.
- MARZANO, A. Nota su un fattore endogeno delle fluttuazioni: aspetti della funzione del consumo. (With English summary.) *Risparmio*, May 1961, pp. 905-18.
- McKINNELL, R. The formal analysis of joint supply. *So. Afr. Jour. Econ.*, June 1961, pp. 117-28.
- MINASIAN, J. R. Elasticities of substitution and constant-output demand curves for labor. *Jour. Pol. Econ.*, June 1961, pp. 261-70.
- MISHAN, E. J. Welfare criteria for external effects. *Am. Econ. Rev.*, Sept. 1961, pp. 594-613.
- MOORSTEEN, R. H. On measuring productive potential and relative efficiency. *Quart. Jour. Econ.*, Aug. 1961, pp. 451-67.
- NEGISHI, T. Monopolistic competition and general equilibrium. *Rev. Econ. Stud.*, June 1961, pp. 196-201.
- NISHIKAWA, S. Production function and scale coefficients. *Jour. Econ. Behavior (Tokyo)*, Apr. 1961, pp. 39-52.
- OORT, C. J. De grenzen der toerekening. *De Economist*, May 1961, pp. 321-37.

PERIODICALS

General Economics; Methodology

- AKERMAN, J. Fyra metodologiska moment. (Four methodological moments.) *Ekon. Tids.*, June 1961, pp. 93-112.
- BECKER, J. F. Adam Smith's theory of social science. *So. Econ. Jour.*, July 1961, pp. 13-21.
- CAFFÈ, F. Analisi economica e problemi di politica: note introduttive. *Giorn. d. Econ.*, Mar.-Apr. 1961, pp. 175-88.
- CLERIGA, VERA, J. Intento de construcción de una teoría económica dinámica avanzada. *Investigación Econ.*, 1961, 21 (2), pp. 389-410.
- . Naturaleza de la economía y alcance de las generalizaciones económicas. *Investigación Econ.*, 1961, 21 (1), pp. 59-88.
- GIERSCHE, H. Wirtschaftliches Bewusstsein und wirtschaftliche Wirklichkeit. *Jahrb. f. Sozialwissenschaft.*, 1961, 12 (1), pp. 1-18.
- MAROS DELL'ORO, A. L'insegnamento delle *human relations* nell'economia americana. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, June 1961, pp. 534-46.
- PAPANDREOU, A. G. L'economia come scienza. (With English summary.) *L'industria*, 1961, 2, pp. 133-70.
- VARGA, S. Wirtschafts- und Marktforschung in Ost und West. *Schmollers Jahrb.*, 1961, 81 (3), pp. 1-41.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AIELLO, A. Osservazioni sul "teorema del bilancio equilibrato." *Studi Econ.*, Jan.-Apr. 1961, pp. 91-105.
- ARAOZ, A. B. AND MALMGREN, H. B. Congestion and idle capacity in an economy. *Rev. Econ. Stud.*, June 1961, pp. 202-11.
- ARROW, K. J. Additive logarithmic demand functions and the Slutsky relations. *Rev. Econ. Stud.*, June 1961, pp. 176-81.
- BHATIA, R. J. Unemployment and the rate of change of money earnings in the United States, 1900-1958. *Economica*, Aug. 1961, pp. 286-96.
- BROOKS, R. C. JR. Price cutting and monopoly power. *Jour. Marketing*, July 1961, pp. 44-49.
- BROWN, F. H. S. AND EDWARDS, R. S. The replacement of obsolescent plant. *Economica*, Aug. 1961, pp. 297-302.
- BUCHANAN, J. M. Simple majority voting, game theory, and resource use. *Can. Jour. Econ. Pol. Sci.*, Aug. 1961, pp. 337-48.
- CHERUBINO, S. Sulle nozioni di ciclo di produzione, epoca, struttura, sviluppo. (With English summary.) *L'industria*, 1961, 2, pp. 171-93.
- COATS, A. W. The Political Economy Club: a neglected episode in American economic thought. *Am. Econ. Rev.*, Sept. 1961, pp. 624-37.
- DAS GUPTA, A. K. Adam Smith on value. *Indian Econ. Rev.*, Aug. 1960, pp. 105-15.
- EHRLICHER, W. Die Geld-, Finanz- und Lohnpolitik im volkswirtschaftlichen Systemzusammenhang. *Jahrb. f. Sozialwissenschaft.*, 1961, 12 (1), pp. 80-100.
- EISERMANN, G. Werbung und Wettbewerb. *Zeitschr. f. die ges. Staatswiss.*, June 1961, pp. 258-91.

TITLES OF NEW BOOKS

1147

- ETZIONI, A. A comparative analysis of complex organizations—on power, involvement, and their correlates. New York: The Free Press of Glencoe, 1961. Pp. xx, 366. \$8.50.
- FOURASTIÉ, J. La grande métamorphose du XXe siècle—essais sur quelques problèmes de l'humanité d'aujourd'hui. Paris: Presses Univ. de France, 1961. Pp. 223. NF 9.
- HUNT, E. F. Social science—an introduction to the study of society. 2nd ed. New York: Macmillan, 1961. Pp. xx, 887. \$8.50.
- LEONI, B. Freedom and the law. Princeton: Van Nostrand, 1961. Pp. vii, 204. \$6
A series of lectures delivered at the Fifth Institute on Freedom and Competitive Enterprise, June 15-28, 1958, at Claremont Men's College, Claremont, Calif.
- LERNER, D., ed. Quantity and quality: the Hayden Colloquium on scientific method and concept. New York: The Free Press of Glencoe, 1961. Pp. 221. \$4.50.
- MCCLELLAND, D. C. The achieving society. Princeton: Van Nostrand, 1961. Pp. xv, 512. \$7.95.
- RESTLE, F. Psychology of judgment and choice: a theoretical essay. New York: Wiley, 1961. Pp. xiii, 235. \$6.95.
- SCHOECK, H. AND WIGGINS, J. W., ed. Relativism and the study of man. Princeton: Van Nostrand, 1961. Pp. x, 259. \$6.50.

- West Virginia Univ. bull. ser. 62, no. 2-3. Morgantown: Inst. of Indus. Rel., West Virginia Univ. [1961]. Pp. vi, 41.
- Report of the Committee of Experts on the Application of Conventions and Recommendations. Pt. 3, Minimum standards of social security. Pt. 4, Aspects of social evolution in present and former non-metropolitan territories. Geneva: Internat. Lab. Office, 1961. Pp. 84; 121. 75c; \$1.
- The rise of chronic unemployment—a statement by the Nat. Planning Assoc. Board of Trustees and Standing Committees. Planning pamph. no. 113. Washington: Nat. Planning Assoc., 1961. Pp. 44.
- Training of the unemployed. Hearings before the Subcommittee on Employment and Manpower of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess., Mar. 20, 21, June 5 and 7, 1961. Washington: Supt. Docs., 1961. Pp. 309; 96.
- Youth Employment act, Youth Conservation Corps. Hearings before the Subcommittee on Employment and Manpower of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess., June 12-23, 1961. Washington: Supt. Docs., 1961. Pp. 415.

Population; Welfare Programs; Consumer Economics

- AIRD, J. S. The size, composition, and growth of the population of mainland China. Bur. Census, Internat. pop. stat. rept., ser. P-90, no. 15. Washington: Supt. Docs., 1961. Pp. vi, 100. 55c.
- BECKER, J. M. The adequacy of the benefit amount in unemployment insurance. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1961. Pp. 64. Single copies free.
- EICHER, J. C. Consommation et épargne. Recherches écon., no. 4. Paris: Sirey, 1961. Pp. 164. NF 15.
- PETERSEN, W. Population. New York: Macmillan, 1961. Pp. xx, 652. \$7.95.
- SAUVY, A. Les limites de la vie humaine. Les grands problèmes, no. 7. Paris: Hachette, 1961. Pp. 152. NF 6.
- THOMAS, B. International migration and economic development—a trend report and bibliography. New York: Internat. Doc. Svce., Columbia Univ. Press, 1961. Pp. 85.
- Impact of inflation on retired persons. A statement of problems, issues and approaches together with recommendations from the 1961 White House Conference on Aging prepared by the Dept. of Health, Education and Welfare Special Staff on Aging. Washington: Supt. Docs., 1961. Pp. 39.
- Modification of federal grants-in-aid for public health services. [Washington]: U.S. Advisory Comm. on Intergovernmental Rel., 1961. Var. pp.
- Voluntary health and welfare agencies in the United States—an exploratory study by an Ad Hoc Citizens Committee. New York: Schoolmaster's Press, 1961. Pp. vi, 88. \$1.

Related Disciplines

- ALEXANDER, R., ed. Sources of information and unusual services. 6th ed. A guide to information, pamphlets and services available from organizations and agencies in the United States. Arranged by subject. New York: Informational Directory Co., 1961. Pp. 84. \$2.95.
- BRYSON, G. D. American management abroad—a handbook for the business executive overseas. New York: Harper, 1961. Pp. xiii, 240. \$5.
- CAHN, E. The predicament of democratic man. New York: Macmillan, 1961. Pp. 194. \$3.95.
- COCHRAN, B. The cross of the moment. New York: Macmillan, 1961. Pp. 267. \$5.
- CORSINI, R. J., SHAW, M. E. AND BLAKE, R. R. Roleplaying in business and industry. New York: The Free Press of Glencoe, 1961. Pp. ix, 246. \$6.

- pared by the Statistics Div., UN Food and Agric. Organization. New York: Columbia Univ. Press, 1961. Pp. xv, 507.
- Il reddito agricolo e l'industrializzazione dell'agricoltura. Atti del X Convegno di studi di economia e politica industriale, Bologna, 7-9 aprile 1961. *Riv. di Pol. Econ.*, June 1961. Rome: Amministrazione della Riv. Pol. Econ., 1961. Pp. 423.
- Seminar on cost studies in agriculture. Ser. 3. Bombay: Indian Soc. of Agric., 1961. Pp. vii, 177. Paper, Rs 8.
- Water: measuring and meeting future requirements. Western Resources Conference—2nd, University of Colorado, 1960—edited by H. L. Amoss. Western resources papers, 2. Boulder: Univ. Colorado Press, 1961. Pp. 261.

Labor Economics

- BILLERBECK, K. Mobilization of manpower potential in Asia and Africa. Hamburg: Hamburg Archives of World Economy, 1961. Pp. 169. Paper, DM 16.
- BLOOM, G. F. AND NORTHRUP, H. R. Economics of labor relations. 4th ed. Homewood, Ill.: Irwin, 1961. Pp. xvii, 881. \$8.
- CHABERT, A. Les salaires dans l'industrie française: les textiles. Etudes et mémoires, no. 46. Paris: A. Colin, 1960. Pp. xii, 291. NF 20.
- GAVERT, T. W. Wage differentials in West Virginia. West Virginia Univ. bull. ser. 61 no. 12-1. Morgantown: Bur. Bus. Research, College of Commerce, West Virginia Univ., 1961. Pp. 50.
- GRODIN, J. R. Union government and the law: British and American experiences. Monogr. ser. no. 8. Los Angeles: Inst. of Indus. Rel., Univ. of California, 1961. Pp. 209. \$3.
- HART, W. R. Collective bargaining in the federal civil service—a study of labor-management relations in United States government employment. New York: Harper, 1961. Pp. xii, 302. \$6.50.
- MARRIOTT, R. Incentive payment systems—a review of research and opinion. 2nd rev. ed. New York: John de Graff; London: Staples, 1961. Pp. 291. \$5.50.
- NEWELL, B. W. Chicago and the labor movement—metropolitan unionism in the 1930's. Urbana: Univ. of Illinois Press, 1961. Pp. viii, 288.
- PERLMAN, M. The machinists: a new study in American trade unionism. Cambridge: Harvard Univ. Press, 1961. Pp. xvii, 333. \$7.50.
- TOLLES, N. A. AND GOLDWASSER, B. C. Labor costs and international trade. Washington: Com. Nat. Trade Policy, 1961. Pp. 43.
- Amendments to Welfare-Pension Plans Disclosure act. Hearings before the Special Subcommittee on Labor of the House Committee on Education and Labor, 87th Cong., 1st sess., May 24-31, June 1-28, 1961. Washington: Supt. Docs., 1961. Pp. 451.
- Grievance handling: a case study of a new approach. IRM no. 139. New York: Indus. Rel. Counselors, Inc., 1961. Pp. 44. \$1.50.
- Impact of automation on employment. Hearings before the Subcommittee on Unemployment and the Impact of Automation of the House Committee on Education and Labor, 87th Cong., 1st sess.—general investigation into types and causes of unemployment—Mar. 8-29, Apr. 12-25, 1961. Washington: Supt. Docs., 1961. Pp. 793.
- Manpower utilization and training. Hearings before the Subcommittee on Unemployment and the Impact of Automation of the House Committee on Education and Labor, 87th Cong., 1st sess., June 6-14, 1961. Washington: Supt. Docs., 1961. Pp. 171.
- Migratory labor. Hearings before the Subcommittee on Migratory Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess., Apr. 12-13, 1961. Washington: Supt. Docs., 1961. Pp. 458.
- The new wage and hour law. By editorial staff, Labor Relations Reporter. [Washington]: Bur. of Nat. Affairs [1961]. Pp. 129; 237.
- Proceedings of the eleventh annual Labor-Management Conference April 20-21, 1961.

Study of cost structures and cost finding procedures in the regulated transportation industries. Washington: R. L. Banks & Assoc. for U.S. Dept. of Commerce, 1959. Var. pp.

Land Economics; Agricultural Economics; Economic Geography; Housing

ANDREWS, S. The farmer's dilemma. Washington: Public Affairs Press, 1961. Pp. vii, 184. \$4.50.

BAUM, E. L., DIESSLIN, H. G. AND HEADY, E. O., ed. Capital and credit needs in a changing agriculture. Ames: Iowa State Univ. Press, 1961. Pp. xix, 406. \$4.95.

BLONDEL, F. L'économie du sous-sol dans les pays sous-développés. Paris: Presses Univ. de France, 1961. Pp. 91.

CEPEDE, M. Agriculture et alimentation en France durant la IIème guerre mondiale. Paris: Edit. Génin, 1961. Pp. 511. NF 40.

DUMONT, R. Terres vivantes—voyage d'un agronome autour du monde. Paris: Plon, 1961. Pp. 352. NF 17.80.

EDWARDS, D. Report on an economic study of small farming in Jamaica. Kingston: Inst. of Soc. and Econ. Research, Univ. College of the West Indies, 1961. Pp. 370. \$4.

GAROFALO, S. Il frutto di alcuni investimenti di lungo periodo in agricoltura. Milan: A. Giuffrè, 1960. Pp. 89.

HEADY, E. O., BAKER, C. B., DIESSLIN, H. G., KEHRBERG, E. AND STANFORTH, S., ed. Agricultural supply functions—estimating techniques and interpretation. Ames: Iowa State Univ. Press for North Central Farm Management Research Com., 1961. Pp. viii, 305. \$3.95.

LEARN, E. W. AND HOUCK, J. P., JR. An evaluation of market development projects in West Germany under section 104(a) of Public Law 480. Station bull. 455. [Minneapolis]: Agric. Experiment Station, Univ. of Minnesota, 1961. Pp. 79.

MITCHELL, R. B. Metropolitan planning for land use and transportation—a study prepared under contract with the Special Assistant to the President for Public Works Planning. Washington: Supt. Docs., 1961. Pp. 47.

SPENGLER, J. J., ed. Natural resources and economic growth. Papers presented at a conference held at Ann Arbor, Michigan, April 7-9, 1960, under joint sponsorship of Resources for the Future Inc. and SSRC Committee on Economic Growth. Washington: Resources for the Future, 1961. Pp. x, 306. \$3.50.

Agricultural act of 1961: wheat program for 1962. Ser. E, Pt. 10. Hearings before the Subcommittee on Wheat of the House Committee on Agriculture, 87th Cong., 1st sess., June 14 and 15, 1961. Washington: Supt. Docs., 1961. Pp. 79.

The coffee industry in Papua-New Guinea—an economic survey. Canberra: Bur. of Agric. Econ., 1961. Pp. 155, mimeo.

Compendio del segundo censo nacional del café, cosecha 1957-1958. San Salvador: Dirección General de Estadística y Censos, República de El Salvador, C. A., 1961. Pp. viii, 67.

Farm policy for the sixties—a statement by the NPA Agriculture Committee and a report by Lauren K. Soth. Special rept. no. 59. Washington: Nat. Planning Assoc., 1961. Pp. vi, 26. \$1.

Housing act of 1961. Report together with individual and supplemental views. Senate Committee on Banking and Currency, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 111.

———. Report together with minority views. House Committee on Banking and Currency, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 171.

Price support and production adjustment activities. Twenty-sixth report by the Committee on Governmental Operations, 86th Cong., 2nd sess. Washington: Supt. Docs., 1960. Pp. vi, 85. Free copy may be had from Intergovernmental Relations Subcommittee, Home Office Bldg., Washington 25, D.C.

Production yearbook. Vol. 14, 1960. In English and French with a Spanish glossary. Pre-

- SCHENKER, E. General cargo capacity at Wisconsin lake ports. Wisconsin commerce rept., vol. 6 (2). Madison: Bur. Bus. Research and Svce., School of Commerce, Univ. of Wisconsin, 1961. Pp. 94. \$1.15.
- STELZER, I. M. Selected antitrust cases—landmark decisions in federal antitrust. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. x, 242. \$4.50.
- STOCKING, G. W. Workable competition and antitrust policy. Nashville: Vanderbilt Univ. Press, 1961. Pp. vii, 451. \$7.50.
- TEITELBAUM, P. D. Energy production and consumption in the United States: an analytical study based on 1954 data. Washington: Dept. of the Interior, Bur. of Mines, 1961. Pp. 145.
- VANCE, S. Industrial structure and policy. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. 529.
- VIRO, F., ed. *Concorrenza e monopolio nell'economia italiana*. Milan: Vita e Pensiero, 1960. Pp. 129.
- Contributions by: S. Lombardini, F. Feroldi, G. Mazzocchi, L. Frey and O. Garavello.
- Administered prices. Pt. 27 and 28, Price fixing and bid rigging in the electrical manufacturing industry. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 1st sess., April 13-28 and May 2; May 3-18, June 5-23, 1961. Washington: Supt. Docs., 1961. Pp. 693; 765.
- Federal-aid-to-airport program. Hearings before the Aviation Subcommittee of the Senate Committee on Commerce, 87th Cong., 1st sess., June 12-14, 1961. Washington: Supt. Docs., 1961. Pp. 359.
- Federal-aid-highway financing. Hearings before the House Committee on Ways and Means, 87th Cong., 1st sess., Mar. 14-21. Washington: Supt. Docs., 1961. Pp. 731.
- Independent Regulatory Agencies act of 1961. Hearings before the House Committee on Interstate and Foreign Commerce, 87th Cong., 1st sess., June 6-9, 1961. Washington: Supt. Docs., 1961. Pp. 166.
- Intergovernmental responsibilities for mass transportation facilities and services in metropolitan areas. Washington: U.S. Advisory Comm. on Intergovernmental Rel., 1961. Pp. 54.
- Monopoly problems in regulated industries. Pt. 3, vol. 1, Ocean freight industry. Hearings before the Antitrust Subcommittee of the House Committee on the Judiciary, 87th Cong., 1st sess., Mar. 7-16, 1961. Washington: Supt. Docs., 1961. Pp. 805.
- Premerger notification. Hearings before the Antitrust Subcommittee of the House Committee on the Judiciary, 87th Cong., 1st sess., Apr. 27, 28, May 3 and 4, 1961. Washington: Supt. Docs., 1961. Pp. 277.
- To provide for the operation of steamship conferences. Hearings before the special Subcommittee on Steamship Conferences, House Committee on Merchant Marine and Fisheries, 87th Cong., 1st sess., Mar. 20-29, Apr. 10-28, 1961. Washington: Supt. Docs., 1961. Pp. 574.
- Report—Royal Commission on the Automotive Industry. V. W. Bladen, Chairman. Ottawa: The Queen's Printer, 1961. Pp. 110. \$2.
- Report of a study group. Conference on Transportation Research, Woods Hole, Mass., 1960. Washington: Nat. Acad. Sci., Nat. Research Council, 1960. Pp. 88.
- Small Business Administration—1961. Annual review of the operations of the Small Business Administration. Hearings before the Senate Committee on Small Business, 87th Cong., 1st sess., June 21 and 22, 1961. Washington: Supt. Docs., 1961. Pp. 103.
- Small Business Investment act—1961. Hearings before a subcommittee of the Senate Committee on Banking and Currency, 87th Cong., 1st sess., July 31 and Aug. 2, 1961. Washington: Supt. Docs., 1961. Pp. 151.
- Small Business Investment act amendments of 1961. Hearings before Subcommittee no. 2 of the House Committee on Banking and Currency, 87th Cong., 1st sess., Aug. 1-4, 1961. Washington: Supt. Docs., 1961. Pp. 130.

- GOLDBERG, L. Concepts of depreciation. Melbourne: Law Book Co. of Australasia, 1960. Pp. iv, 130. 30s.
- HENDRIKSEN, E. S. Price-level adjustments of financial statements—an evaluation and case study of two public utility firms. Bur. econ. and bus. research bull. no. 35. Pullman: Washington State Univ. Press, 1961. Pp. viii, 134. \$4.
- HOOS, I. R. Automation in the office. Washington: Public Affairs Press, 1961. Pp. 138. \$4.50.
- KRUPP, S. Pattern in organization analysis: a critical examination. Philadelphia: Chilton, 1961. Pp. xiv, 201. \$5.
- MANNE, A. S. Economic analysis for business decisions. New York: McGraw-Hill, 1961. Pp. x, 177. \$6.95.
- MARTIN, A. L. La prévision économique et la direction de l'entreprise. Paris: Edit. de l'Entreprise moderne, 1961. Pp. 316. NF 49.
- MAYER, K. B. AND GOLDSTEIN, S. The first two years: problems of small firm growth and survival. Small bus. research ser. no. 2. Washington: Small Bus. Admin., 1961. Pp. x, 233. \$1.
- Based on the detailed observation of 81 small retail and service firms over a 2-year period.
- ONIDA, P. Economia d'azienda. Turin: UTET, 1960.
- PATTON, A. Men, money and motivation—executive compensation as an instrument of leadership. New York: McGraw-Hill, 1961. Pp. 233.
- THAYER, L. O. Administrative communication. Homewood, Ill.: Irwin, 1961. Pp. xiv, 344. \$6.50.
- VORIS, W. Production control—text and cases. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xv, 423. \$7.95.
- Contributions to scientific research in management—the proceedings of the scientific program following the dedication of the Western Data Processing Center, Graduate School of Business Administration, University of California, Los Angeles, Jan. 29-30, 1959. Los Angeles: Div. of Research, Grad. School of Bus. Admin., Univ. of Calif., Los Angeles, 1959. Pp. ix, 172. \$2.50.

Industrial Organization; Government and Business; Industry Studies

- BRADY, R. A. Organization, automation, and society—the scientific revolution in industry. Berkeley: Univ. of California Press, 1961. Pp. xiv, 481. \$8.50.
- BURN, D. The steel industry 1939-1959—a study in competition and planning. New York: Cambridge Univ. Press, 1961. Pp. xvi, 728. \$14.50.
- BUSHNELL, J. A. Australian company mergers 1946-1959. New York: Cambridge Univ. Press; Melbourne: Melbourne Univ. Press, 1961. Pp. xii, 223. \$7.50.
- FAUQUET, L. G. Histoire de la rayonne et des textiles synthétiques. Etudes et mémoires, no. 47. Paris: A. Colin, 1960. Pp. 271.
- FERGUSON, A. R., LERNER, E. M. AND OTHERS. The economic value of the United States Merchant Marine. Evanston, Ill.: Transportation Center, Northwestern Univ., 1961. Pp. xxii, 545.
- IUTO, W. Electric utilities—costs and performance: a study of inter-utility differences in the unit electric costs of privately owned electric utilities. Bur. econ. and bus. research bull. no. 34. Pullman: Washington State Univ. Press, 1961. Pp. 180. \$7.50.
- NEALE, A. D. The antitrust laws of the United States of America—a study of competition enforced by law. Nat. Inst. Econ. and Soc. Research, Econ. and soc. stud. 19. Cambridge, Eng.: University Press, 1960. Pp. 516.
- PECK, M. J. Competition in the aluminum industry 1945-1958. Cambridge: Harvard Univ. Press, 1961. Pp. x, 227. \$5.25.
- RICHMOND, S. B. Regulation and competition in air transportation. New York: Columbia Univ. Press, 1961. Pp. vii, 309. \$7.50.

- 8400 to promote the foreign policy, security and general welfare of the United States by assisting peoples of the world in their efforts toward economic and social development and internal and external security, and for other purposes. 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 191.
- Rapport de l'Institut Belgo-Luxembourgeois du Change pour l'année 1960 présenté par le président au nom du Conseil. Brussels: L'Institut Belgo-Luxembourgeois du Change, 1961. Pp. 23.
- Special report of the National Advisory Council on the proposed International Development Association. Washington: Nat. Advisory Council on Internat. Monetary and Fin. Problem, 1960. v.p.
- U.S. foreign assistance, and assistance from international organizations; obligations and other commitments, July 1, 1945 through June 30, 1960. Washington: Office of Stat. and Rept., U.S. Internat. Coop. Admin., 1961. Pp. 109.

Business Finance; Investment and Security Markets; Insurance

- BADGER, R. E., TORGERSON, H. W. AND GUTHMANN, H. G. Investment principles and practices. 5th ed. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xxv, 694. \$7.95.
- JOHANSSON, S.-E. Skatt-investerings-värdering. (Wealth, investment, value.) Stockholm, 1961. Pp. 257.
- MEHR, R. I. AND OSLER, R. W. Modern life insurance—a textbook of income insurance. 3rd ed. New York: Macmillan, 1961. Pp. xiv, 754. \$8.50.
- RUDLOFF, M. P. L'investissement et le demande—essai sur la théorie de l'investissement induit. Observation écon., no. 19. Paris: S.E.D.E.S., 1960. Pp. 280. NF 11.
- Capital expansion and capacity in postwar manufacturing. Stud. in bus. econ. no. 72. New York: Nat. Indus. Conf. Board, 1961. Pp. 88.
- Life insurance fact book 1961. New York: Inst. of Life Insurance [1961]. Pp. 128.

Business Organization; Managerial Economics; Marketing; Accounting

- AUBERT-KRIER, J., BENOIT, J. AND THIBERT, R. B. La prévision et le contrôle de gestion. Paris: Dunod, 1961. Pp. x, 157. NF 15.
- BÄSS, F. M., BUZZELL, R. D. AND OTHERS, ed. Mathematical models and methods in marketing. Homewood, Ill.: Irwin, 1961. Pp. xi, 545. \$8.50.
- BEDFORD, N. M., PERRY, K. W. AND WYATT, A. R. Advanced accounting: an organizational approach. New York: John Wiley, 1961. Pp. xviii, 781. \$9.95.
- BROOM, H. N. AND LONGENECKER, J. G. Small business management. Cincinnati: South-Western, 1961. Pp. viii, 728.
- Instructor's manual to accompany text available.
- CHARNES, A. AND COOPER, W. W. Management models and industrial applications of linear programming. Vol. 1. New York: Wiley, 1961. Pp. xxiii, 471. \$11.75.
- CREAMER, D. Capital expansion and capacity in postwar manufacturing. Stud. in bus. econ. no. 72. New York: Nat. Indus. Conf. Board, 1961. Pp. 88. \$2.50; \$12.50, non-Associates.
- DORIAN, M. Dupont de Nemours—de la poudre au nylon. Hist. des grandes entreprises, no. 4. Paris: Plon, 1961. Pp. 194. NF 9.25.
- EDWARDS, E. O. AND BELL, P. W. The theory and measurement of business income. Berkeley: Univ. of California Press, 1961. Pp. xv, 323. \$7.50.
- EELLS, R. AND WALTON, C. Conceptual foundations of business—an outline of the major ideas sustaining business enterprise in the Western world. Homewood, Ill.: Irwin, 1961. Pp. x, 533. \$7.
- FETTER, R. B. AND DALLECK, W. C. Decision models for inventory management. Homewood, Ill.: Irwin, 1961. Pp. x, 123. \$5.75.

at Home and Abroad, held at Columbia University in 1954 on the occasion of the 200th anniversary of the founding of the University.

LUTZ, F. A. International payments and monetary policy in the world today. Wicksell lectures 1961. Stockholm: Almqvist & Wiksell, 1961. Pp. 41. SKr. 5.50.

PINCUS, J. The industrial development laws of Central America. Washington: Tech. Aids Branch, Office of Indus. Resources, Internat. Coop. Admin., 1961. Pp. 90.

SAINT MARC, P. La France dans la C.E.C.A.—une expérience de planifications multiples du charbon et de l'acier. Cahiers de Fond. Nat. Sci. Pol. no. 114. Paris: A. Colin, 1961. Pp. 438. NF 24.

SINGER, J. D. Financing international organization—the United Nations budget process. The Hague: Nations Nijhoff, 1961. Pp. xvi, 185. f 14.50.

STREITEN, P. Economic integration—aspects and problems. European aspects ser. B: econ. no. 5. Leyden: A. W. Sythoff, 1961. Pp. 150. f 12.

A thesis submitted to the Council of Europe, Strasbourg, in fulfilment of the terms of a research fellowship.

ZOLOTAS, X. Towards a reinforced gold exchange standard. Papers and lectures no. 7. Athens: Bank of Greece, 1961. Pp. 19.

An act for international development—fiscal year 1962. A program for the decade of development—summary presentation by President's Task Force on Foreign Economic Assistance, June 1961. Dept. of State, gen. foreign pol. ser. 169. Washington: Supt. Docs., 1961. Pp. 189.

The economics of Soviet trade—USSR. Washington: Joint Pub. Research Svce., 1961. Pp. 181.

Examination of economic and technical assistance program for Brazil, International Cooperation Administration, Department of State, fiscal years 1955-1959: report to the Congress of the United States by the Comptroller General. Washington: General Accounting Office, 1960. Pp. 45.

First annual report of the European Free Trade Association for the period ending 1st July, 1961. Geneva: European Free Trade Assoc., 1961. Pp. 40.

Foreign commerce. Hearings before the Senate Committee on Commerce, 87th Cong., 1st sess., June 21, 22, and July 11-24, 1961. Washington: Supt. Docs., 1961. Pp. 213.

Foreign operations appropriations for 1962. Pt. 1, Overall general statements. Hearings before the Subcommittee of the House Committee on Appropriations, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 224.

The General Agreement on Tariffs and Trade. Dept. of State commercial policy ser. Washington: Supt. Docs., 1961. Pp. 74. 25c.

International development and security. Pt. 1 and 2. Hearings before the Senate Committee on Foreign Relations, 87th Cong., 1st sess., May 31-June 27, 1961. Washington: Supt. Docs., 1961.

The International Development and Security act. Pt. 1, 2 and 3. Hearings before the House Committee on Foreign Affairs, 87th Cong., 1st sess., June 7-29 and July 6. Washington: Supt. Docs., 1961. Pp. 1524.

International Finance Corporation. Hearing before Subcommittee no. 1 of the House Committee on Banking and Currency, May 10, 1961, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 33.

International payments imbalances and need for strengthening international financial arrangements. Hearings before the Subcommittee on International Exchange and Payments of the Joint Economic Committee, May 16, June 19-21, 1961. Washington: Supt. Docs., 1961. Pp. iii, 340. \$1.

———. Report of the Subcommittee on International Exchange and Payments to the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vi, 26. 15c.

Mutual security act of 1961. Report of the House Committee on Foreign Affairs on H.R.

- BREAR, G. F. The economic impact of federal loan insurance—a special project report. Washington: Nat. Planning Assoc., 1961. Pp. 271.
- GANGEMI, L. *Finanza pubblica*, vol. 1. Naples: Giannini, 1961. Pp. xii, 470. L. 6.000.
- LATHAM, D., ATKESON, T. C. AND OTHERS. Management's stake in tax administration. Symposium conducted by the Tax Institute September 29-30, 1960. Princeton: Tax Inst., 1961. Pp. x, 260.
- MOSHER, F. C. WITH KIDD, K. R. AND BUSH, G. W. Recent trends in governmental finances in the United States. Berkeley: Univ. of California Bur. Pub. Admin., 1961. Pp. 76. \$2.
- NEUMARK, F. *Steuerpolitik in der Überflusgesellschaft*. Berlin: Duncker & Humblot, 1961. Pp. 31. DM 3.60.
- PESENTI, A. *Lezioni di scienza della finanze e diritto finanziario*. Rome: Ed. Riuniti, 1961. Pp. 303.
- SACKS, S. AND HELLMUTH, W. F., JR. WITH EGAND, L. M. AND OTHERS. Financing government in a metropolitan area—the Cleveland experience. New York: The Free Press of Glencoe, 1961. Pp. xxvii, 387. \$10.
- STAMMATI, G. *La finanza pubblica*. Bologna: Zanichelli, 1960. Pp. 352.
- STEGER, W. A. Simulation and tax analysis—a research proposal. Santa Monica: RAND, 1961. Pp. 29.
- THOMPSON, J. S. Taxation's new frontier: a businessman's study of dignified vs contemptible taxation. New York: Robert Schalkenbach Foundation, 1961. Pp. 96. \$1.
- "The counties should meet their own operating expenses from an agreed portion of the rental value of their area, the balance being paid to the state, which in turn should meet its expenses from an agreed portion and pay the balance as its 'dues' to the association—the United States Government.
- "If this system did not bring sufficient revenue . . . we could always reimpose some of the taxes we had hoped to abolish forever . . ." (From Ch. 19.)
- VON GERSDORFF, R. *Portugals Finanzen—Geschichtlicher Überblick die Finanzreformen Prof. Salazars Steuer- und Staatsschuldenwesen*. Bielefeld: Ernst and Werner Gieseking, 1961. Pp. xii, 280. DM 18.80.
- YOCUM, J. C. Retailers' costs of sales tax collection in Ohio. Bur. Bus. Research monogr. no. 100. Columbus, Ohio: Bur. Bus. Research, College of Commerce and Admin., Ohio State Univ., 1961. Pp. xxi, 163. \$5.
- Internal revenue code of 1954, as amended and in force on January 3, 1961. Prepared by the staff of the Joint Committee on Internat. Revenue Taxation. Washington: Supt. Docs., 1961. Pp. 1148.
- President's 1961 tax recommendations. Hearings before the House Committee on Ways and Means, on the tax recommendations of the President contained in his message transmitted to Congress, Apr. 20, 1961, 87th Cong., 1st sess., May 3-5, 8-11, 12, 15-19, 22-26, 31, June 5-9. Washington: Supt. Docs., 1961. 4 vols.

International Economics

- AUBREY, H. G. WITH DARMSTADTER, J. Coexistence: economic challenge and response. Washington: Nat. Planning Assoc., 1961. Pp. xiv, 323. \$5.
- HABERLER, G. A survey of international trade theory. Spec. papers in internat. econ. no. 1. Princeton: Internat. Fin. Section, Dept. of Econ., Princeton Univ., 1961. Pp. 78. \$1.
- HANSEN, B. Foreign trade credits and exchange reserves—a contribution to the theory of international capital movements. Contrib. to econ. anal. no. 23. Amsterdam: North Holland Pub. Co., 1961. Pp. 144.
- LERACHMAN, R., ed. National policy for economic welfare at home and abroad. New York: Russell & Russell, 1961. Pp. xii, 366, \$7.50.
- A series of lectures given at the Conference on National Policy for Economic Welfare

Cong., 1st sess. Pittsburgh; Newark, N.J.; Chester, Pa.; Providence, R.I. and Atlantic City-Bridgeton, N.J., Feb. 22-27, March 2-9, 1961. Washington: Supt. Docs., 1961. Pp. 528.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

BASU, S. K. A survey of contemporary banking trends. 2nd rev. ed. Calcutta: The Book Exchange, 1961. Pp. xiv, 500. Rs 18.

BROVEDANI, B. Bases analíticas de la política monetaria. México: Centro de Estudios Monetarios Latino-Americanos, 1961. Pp. 144.

CARVALE, G. Il credito al consumo. Turin: UTET, 1960. Pp. 280.

CONFALONIERI, A. Il credito industriale. Milan: A. Giuffrè, 1960. Pp. 298.

HALM, G. N. Economics of money and banking. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xvii, 551. \$7.95.

HAWTREY, R. The pound at home and abroad. New York: Longmans, Green, 1961. Pp. 212. \$5.

"The first part of this book consists of a series of papers covering the period 1954-9, which appeared in the *Bankers' Magazine*, and expressed my views on the current monetary situation from time to time. . . .

"The second part is composed of papers submitted to the Radcliffe Committee and the Council on Prices, Productivity and Incomes, together with my comments on the Report of the former and the Evidence taken by it."

KLAMAN, S. B. The postwar residential mortgage market. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1961. Pp. xxxi, 301. \$7.50.

KOCK, K. Kreditmarknad och räntepolitik 1924-1958. Vol. 1. Uppsala 1961. Pp. 222.

MASSOT, J. Les banques et l'investissement en Allemagne Occidentale. Coll. d'études écon., no. 39. Paris: Libr. gén. de Droit et de Jurisprudence, 1960. Pp. xviii, 166. NF 15.

SONNE, H. C. Supplementary statement to the report of the Commission on Money and Credit. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. v, 30. 50c.

Aspectos monetarios de las economías latino-americanas 1960. México: Centro de Estudios Monetarios Latino-Americanos, 1961. Pp. 282.

Bank of Greece report for the year 1960. Athens: Bank of Greece, 1961. Pp. 60.

Federal Home Loan Bank act amendments. Hearing before the Subcommittee no. 1 of the House Committee on Banking and Currency, 87th Cong., 1st sess., July 13. Washington: Supt. Docs., 1961. Pp. 64.

The federal revenue system: facts and problems, 1961. Materials assembled by the committee staff for the Joint Economic Committee. Washington: Supt. Docs., 1961. Pp. 290.

Modern money mechanics—a workbook on deposits, currency and bank reserves. Chicago: Federal Reserve Bank, 1961. Pp. 31.

Review of annual report of the Federal Reserve System for the year 1960. Hearings before the Joint Economic Committee, 87th Cong., 1st sess., June 1 and 2, 1961. Washington: Supt. Docs., 1961. Pp. iii, 174. 45c.

Public Finance; Fiscal Policy

ANDREADES, A. M. Storia delle finanze greche—dai tempi eroici fino all' inizio dell'età greco-macedonica. Storia della fin. pub. no. 1. Padua: CEDAM, 1961. Pp. lxvi, 491. L. 6.500.

Originally pub. in Greek 1928; transl. by F. De S. Brouwer with G. Iannitto and E. Lama.

BLOCH-LAINE, F. AND DE VOGUE, P. Le trésor public et al mouvement général des fonds. Paris: Presses Univ. de France, 1960. Pp. 376. NF 20.

- RICOSSA, S. *Programmazione lineare*. Turin: Boringhieri, 1961. Pp. 111.
- ROGERS, A. C. *Graphic charts handbook*. Washington: Public Affairs Press, 1961. Pp. iv, 189. \$6.
- VAJDA, S. *Mathematical programming*. Reading, Mass.: Addison-Wesley, 1961. Pp. ix, 310. \$8.50.
- WEISS, L. *Statistical decision theory*. New York: McGraw-Hill, 1961. Pp. viii, 195. \$7.50.
- Congressional district data book (districts of the 87th Congress)—a statistical abstract supplement. Washington: Supt. Docs., 1961. Pp. xxv, 150. \$1.
- Government price statistics. Hearings before the Subcommittee on Economic Statistics, Joint Economic Committee, 86th Cong., 1st sess., Pt. 2, May 1-5, 1961. Washington: Supt. Docs., 1961. Pp. 792.
- . Report of the Subcommittee on Economic Statistics to the Joint Economic Statistics of the Joint Economic Committee, 87th Cong. 1st sess., July 21, 1961. Washington: Supt. Docs., 1961. Pp. v, 13. 10c.
- Statistical abstract of the United States, 82nd ed. Washington: Dept. of Commerce, 1961. Pp. xii, 1037. \$3.50.

Economic Systems; Planning and Reform; Cooperation

- BYLLESBY, L. *Observations on the sources and effects of unequal wealth with propositions towards remedying the disparity of profit in pursuing the arts of life and establishing security in individual prospects and resources*. New York: Russell & Russell, 1961. Pp. 195. \$15.
- First pub. by L. J. Nichols, New York, 1826. According to Joseph Dorfman (who provides an introduction to the reprint of Byllesby's 1826 essay), there appeared in the United States after 1814 quite a number of popular essays inspired by Robert Owen's New Lanark experiment. The present work was, he says, "the first systematic American treatise" in this stream of thought, and it differed "... in certain striking respects from the characteristic Owenite literature."
- MUNBY, D. L. *God and the rich society—a study of Christians in a world of abundance*. New York: Oxford Univ. Press, 1961. Pp. 209. \$5.50.
- PALOMBA, G. *L'espansione capitalistica*. Naples: Giannini, 1961. Pp. xlv, 323.
- STOJANOVIC, R. *Teorija privrednog razvoja u socijalizmu*. (The theory of economic development in socialism.) Belgrade: Haucna Knjiga, 1960. Pp. 326.
- VOOREHS, J. *American cooperatives—where they come from, what they do, where they are going*. New York: Harper, 1961. Pp. xi, 88. \$4.75.

Business Fluctuations

- DE VERDIERE, G. C. *Conjoncture et monnaie*. *Recherches econ.* no. 5. Paris: Sirey, 1960. Pp. iv, 127.
- KUCZYNSKI, J. *Die Geschichte der Lage der Arbeiter unter dem Kapitalismus*. Part I, *Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart*. Vol. II: *Dokumente und Studien zu Band 2*, and, *Studien zur Geschichte der zyklischen Überproduktionskrisen in Deutschland, 1825 bis 1866*. Vol. 12: *Dokumente und Studien A zu Band 3*, and, *Studien zur Geschichte der zyklischen Überproduktionskrisen in Deutschland, 1873 bis 1914*. Berlin: Akademie Verlag, 1961. Pp. viii, 199; vii, 210. DM 16; DM 16.
- SPENCER, M. H., CLARK, C. G. AND HOGUET, P. W. *Business and economic forecasting—an econometric approach*. Homewood, Ill.: Irwin, 1961. Pp. xii, 412. \$7.95.
- Management action to promote business stability. Committee on Economic Policy. Washington: U.S. Chamber of Commerce, 1961. Pp. 31.
- Unemployment situation and outlook. Hearings before the Subcommittee on Employment and Manpower of the Senate Committee on Labor and Public Welfare, 87th

- field areas of North-West Europe in the later nineteenth century. New York: Cambridge Univ. Press, 1961. Pp. xi, 193. \$6.
- YAMADA, I. Theory and application of interindustry analysis. Econ. research ser. no. 4. Tokyo: Kinokuniya Bookstore Co. for Inst. Econ. Research, Hitotsubashi Univ., 1961. Pp. 254.
- L'economia italiana dal 1861 al 1961. Studi nel primo centenario dell' Unità d'Italia. Milan: A. Giuffrè, 1961.
Contributions by several authors.
- Economic Indicators*. A monthly report on the Hawaiian economy. Honolulu: Dept. Econ. Research, First Nat. Bank of Hawaii, 1961. Pp. 16.
- I fattori culturali dello sviluppo economico. Milan: Vita e Pensiero, 1960. Pp. 500.
Contributions by several authors.
- Industrialisierung ländlicher Räume. Vol 17, Raum und gewerbliche Wirtschaft 1. Akademie für Raumforschung und Landesplanung. Hannover: Gebrüder Jänecke Verlag, 1961. Pp. xi, 148, maps. DM 24.
- Investment criteria and economic growth—papers presented at a conference sponsored jointly by the Center for International Studies and the Social Science Research Council October 15-17, 1954. Massachusetts Inst. of Tech. New York: Asia Pub. House, 1961. Pp. viii, 161.
Contributions by J. Tinbergen, P. N. Rosenstein-Rodan, A. O. Hirschman, E. E. Hagen, G. Grossman and W. Fellner.
- Jobs and growth—an "American economic performance budget" to gear our potentials to our needs. Washington: Conf. on Econ. Progress, 1961. Pp. 92. 50c.
- A measure of inflation in Pakistan 1951-60. Monogr. in econ. develop. no. 4. Karachi: Inst. of Develop. Econ., 1961. Pp. 113.
- Piani di sviluppo in Italia dal 1945 al 1960. Milan: A. Giuffrè, 1961. Pp. 360.
Contributions by several authors.
- Il progresso tecnologico e la società italiana—aspetti di teoria e politica economica. Milan: A. Giuffrè for Centro Nazionale di Prevenzione e Difesa Sociale, 1961. Pp. 842. L. 5.000.
A collection of 29 essays by as many authors. Most of the papers are in Italian (but those by Demaria and Vito are translated into English); one (by Walter Hoffman) is in English; and one (by François Perroux) is in French. The four papers by these authors are on the general subject, and are introductory to the two main sections of the volume—one on "Technical Progress, Investment, and Distribution of Income"; the other on "Technical Progress, Market Forms, Commercial Structure, Credit, Finance, and Fiscal Policy."
- Public financial aid to developing countries. Research works ser. no. 1. Rome: General Confederation of Italian Indus., 1961. Pp. xi, 89. \$1.40.
- Sweden's economy 1960. Stockholm: Svenska Handelsbanken, 1961. Pp. 57.
- United States of America monetary and economic situation, 1951-1960. Basle: Bank for Internat. Settlements, 1961. Pp. 38.

Statistical Methods; Econometrics; Social Accounting

- FERRIER, J. Statistiques et probabilités dans l'administration des entreprises publiques et privées. Paris: Eyrolles, 1961. Pp. 256. NF 27.
- LA VOLPE, G. Sistema di contabilità nazionale. Struttura dei finanziamenti e dei pagamenti dell'Italia. Vol 2. Milan: Feltrinelli, 1960.
- OHLSSON, I. On national accounting. Stockholm: Nat. Inst. Econ. Research; Almqvist & Wiksell, distrib., 1961. Pp. vii, 353. SKr. 32; paper, SKr. 25.
- PIATIER, A. Statistique et observation économique. Vol 1, Méthodologie—statistique. Vol 2, Econometrie—conjoncture—comptabilité nationale. Paris: Presses Univ. de France, 1961. Pp. 972. NF 20; 22.

- HICKS, U. K., CARNELL, F. G., HICKS, J. R., NEWLYN, W. T. AND BIRCH, A. H. *Federalism and economic growth in underdeveloped countries—a symposium*. New York: Oxford Univ. Press, 1961. Pp. 185. \$4.
- This symposium is based on papers presented at a conference which met at Exeter in 1959. "The aim of the Working Party discussions . . . was to throw light on the problems of emergent countries which have adopted, or are in course of adopting, federal constitutions. . . . It was hoped that, by bringing together the separate approaches of anthropologists, political theorists and the various relevant branches of economics, not only the solutions but also the problems themselves would become clearer. In this I think we were not wholly disappointed." (From the introduction by Ursula K. Hicks.)
- HODGKINS, J. A. *Soviet power: energy resources, production and potentials*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xviii, 189. \$5.25; text, \$3.95.
- JOLY, R. AND ESTIENNE, P. *La Région du Centre. France de demain*, no. 8. Paris: Presses Univ. de France, 1961. Pp. 156. NF 15.
- KALDOR, N. *Ensayos sobre desarrollo económico*. México: Centro de Estudios Monetarios Latino-Americanos, 1961. Pp. 134.
- KAPOOR, A. AND CHAND, S. *Major industries of India*. Know India ser. no. 4. Delhi: Metropolitan Book Co., 1959. Pp. 200.
- KNORR, K. AND BAUMOL, W. J., ed. *What price economic growth?* Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. x, 174. Paper, \$1.95.
- Contributions by: W. J. Baumol, S. T. Beza, W. G. Bowen, W. Carmichael, K. Knorr, J. Markham, G. Patterson, R. E. Quandt and S. Verba.
- LEDUC, G., LE PORTZ, Y. AND OTHERS. *Les problèmes de l'investissement dans les pays d'Outre-Mer—Algérie-Tunisie-Maroc-Afrique-Occidentale et Equatoriale-Sud-Vietnam et Cambodge*. Cahiers I.S.E.A., no. 109, ser. F., no. 16. Paris: Inst. Sci. Econ. Appliquée, 1961. Pp. 206.
- LUZZATTO, G. *An economic history of Italy—from the fall of the Roman Empire to the beginning of the sixteenth century*. New York: Barnes & Noble, 1961. Pp. vii, 180. \$5.
- MARNATA, F. *Les loyers des bourgeois de Paris 1860-1958*. *Recherches sur l'économie française*, no. 5. Paris: A. Colin, 1961. Pp. x, 118. NF 8.
- MAWRIZKI, S. *L'industrie lourde en Union Soviétique*. Geneva: E. Droz, 1961. Pp. 155. 16 sw. fr.
- MOSCOVICI, S. *Reconversion industrielle et changements sociaux*. *Cahiers de Fond. Nat. Sci. Pol.* no. 112. Paris: A. Colin, 1961. Pp. 338. NF 19.50.
- PASQUIER, A. *L'économie du Portugal—données et problèmes de son expansion*. *Coll. d'études écon.* no. 40. Paris: R. Pichon and R. Durand-Auzias [1961]. Pp. iv, 234. NF 19.70.
- PERROT, M. *Le mode de vie des familles bourgeoises 1873-1953*. *Recherches sur l'écon. française*, no. 4. Paris: A. Colin, 1961. Pp. viii, 300. NF 19.
- SPULBER, N., ed. *Study of the Soviet economy—direction and impact of Soviet growth—teaching and research in Soviet economics*. Indian Univ. pub. Russian and East European ser. vol. 25. Bloomington: Indiana Univ., 1961. Pp. xiii, 169. \$3.
- TABORSKY, E. *Communism in Czechoslovakia 1948-1960*. Princeton: Princeton Univ. Press, 1961. Pp. xii, 628. \$12.50.
- TENENTI, A. *Venezia e i corsari 1580-1615*. Bari: Laterza, 1961. Pp. 204, L. 1400.
- VOGEL, R., ed. *Die Donau in ihrer geschichtlichen, wirtschaftlichen und kulturellen Bedeutung*. Papers presented at the Internationale Hochschulwoche in Regensburg, October 24-27, 1960. Munich: Südosteuropa-Verlagsgesellschaft, 1961. Pp. x, 187. DM 15.80.
- WADDELL, D. A. G. *British Honduras—a historical and contemporary survey*. New York: Oxford Univ. Press for Royal Inst. of Internat. Affairs, 1961. Pp. vii, 151. \$2.90.
- WRIGLEY, E. A. *Industrial growth and population change—a regional study of the coal-*

- by E. Droz, Geneva and Minard, Paris, 1958. Reviewed in the June 1959 issue of this *Review*.
- COLLETTE, J.-M. La recherche-développement en Grande-Bretagne. Cahiers I.S.E.A., no. 110, ser. T., no. 2. Paris: Inst. Sci. Econ. Appliquée, 1961. Pp. 183.
- COMINOTTI, R. AND GARAVINI, R. Occupazione, redditi e consumi in un grande centro industriale, Torino. Milan: Feltrinelli, 1961.
- COORNAERT, E. Les Français et le commerce international à Anvers. Fin du XV-XVIème siècle. 2 vol. Paris: M. Rivière, 1961. Pp. 448; 360. NF 35; 35.
- COSTANZO, G. A. Programas de estabilización económica en América Latina. México: Centro Estud. Mon. Latinoamericanos (CEMLA), 1961. Pp. 143.
- DA SILVA, J. G. Marchandises et finances—lettres de Lisbonne. Paris: S.E.V.P.E.N., 1961. Pp. 492.
- DAVIS, L. E., HUGHES, J. R. T. AND McDOUGALL, D. M. American economic history—the development of a national economy. Homewood, Ill.: Irwin, 1961. Pp. xiii, 408. \$7.50.
- DELEFORIERE, N. AND MORICE, J. Les revenus départementaux en 1864 et en 1954. Paris: A. Colin, 1959. Pp. xii, 340. NF 19.
- DE PRADA, V. Lettres marchandes d'anvers. Vol. 3. Paris: S.E.V.P.E.N., [1961]. Pp. 241.
- DI FENIZIO, F. Le leggi dell'economia. IV, Diagnosi, previsioni, politiche congiunturali in Italia. 2 vol. Milan: L'Industria, 1959.
- EINAUDI, L. Cronache economiche e politiche di un trentennio (1893-1925). Vol. 5, 1919-1920. Turin: Giulio Einaudi, 1961. Pp. xliii, 994. L. 5000.
- FERREIRA LIMA, H. Formação industrial do Brasil—período colonial. Rio de Janeiro: Ed. Fundo de Cultura, 1961. Pp. 328. Cr\$ 450,00.
- FISHER, F. J., ed. Essays in the economic and social history of Tudor and Stuart England—in honour of R. H. Tawney. New York: Cambridge Univ. Press, 1961. Pp. 235. \$5.50.
- FROST, R. The backward society. New York: St. Martin's Press, 1961. Pp. 246. \$5.
 "This book is concerned with the problem of increasing the wealth of poor and backward countries." The five parts successively consider: "the international context of the problem"; "the nature of the backward nation"; "the question of reorganizing backward nations along modern lines"; "the organization in practice, and in terms of, a country's economic resources, . . ."; and "the significance of foreign trade as providing the main opportunity for the progress of backward countries."
- FURTADO, C. Desenvolvimento e subdesenvolvimento. Rio de Janeiro: Ed. Fundo de Cultura, 1961. Pp. 272. Cr\$ 450,00.
- GADGIL, D. R. Planning and economic policy in India. New York: Asia Pub. House; New York: Taplinger, distrib., 1961. Pp. xvii, 199. \$4.50.
- GARINO-CANINA, A. Scritti di storia economica e finanziaria. Turin: Giappichelli, 1961. Pp. xxix, 350.
- GENDARME, R. L'Economie de Madagascar. Diagnostic et perspectives de développement. Etudes malgaches, no. 1. Paris: Cujas, 1960. Pp. 212. NF 22.
- GUELFAT, I. Doctrines économiques et pays en voie de développement. Paris: Presses Univ. de France, 1961. Pp. 132. NF 6.
- HACKER, L. M. Major documents in American economic history. Vol. 1, From an agrarian to an industrial economy (1785-1900). Vol. 2, The Problems of a world power (the 20th century). Princeton: Van Nostrand, 1961. Pp. 188; 187. Paper, \$1.25 each.
- HALDAR, M. K. AND GHOSH, R., ed. Problems of economic growth—report of a seminar held in Tokyo, 1957. Delhi: Office for Asian Affairs, Cong. for Cultural Freedom, [1960]. Pp. 229.
- HEERS, J. Genes au XVe siècle. Paris: S.E.V.P.E.N., 1961. Pp. 741.

- FELLNER, W., GILBERT, M. AND OTHERS. The problem of rising prices. Washington: Org. for European Econ. Co-op., 1961. Pp. 489. \$3.75.
- FELLNER, W. AND HALEY, B. F., ed. Ensayos sobre la teoría de la distribución de la renta. Madrid: Aguilar, 1961. Pp. xxiv, 616.
Originally pub. for the Am. Econ. Assoc. by Blakiston, Philadelphia. Transl. by J. A. Castellano Marco.
- HENDERSON, J. S. National income: statics and dynamics. New York: Harper, 1961. Pp. viii, 439, \$6.50.
- INÁRRITU, A. L. Dinero y capital—dos temas sobre administración del margen inflacionario. Mexico: School of Econ., Univ. of Mexico, 1961. Pp. 186.
- KLEIN, L. R. The Keynesian revolution. New York: Macmillan, 1961. Pp. xii, 218. Paper, \$1.50.
Originally published in 1947.
- LUNDBERG, E. Produktivitet och Räntabilitet—studier i kapitalets betydelse inom svenskt näringsliv. Stockholm: Indus. Council for Soc. and Econ. Stud., 1961. Pp. 286. SKr 24.
- MARRAMA, V. Ciclo economico e politica anticiclica. Naples: Giannini, 1961. Pp. 386.
- MCCRACKEN, H. L. Keynesian economics in the stream of economic thought. Baton Rouge: Louisiana State Univ. Press, 1961. Pp. vi, 201. \$5.
- MICHEL, M. Stratégie du marché—théorie de la firme et vente sous marque. Paris: Presses Univ. de France, 1961. Pp. 246. NF 24.
- PIRETO, V. Lettere a Maffeo Pantaleoni, 1890-1923. Edited by G. De Rosa. 3 vol. Rome: Banca Nazionale del Lavoro, 1960.
- PAUNIO, J. J. A study in the theory of open inflation. Bank of Finland Inst. for Econ. Research pub. ser. B:20. Helsinki: Bank of Finland Inst. for Econ. Research, 1961. Pp. 141.
Originally pub. in Finnish 1959. Transl. by J. Railo.
- PIETTRE, A. Histoire de la pensée économique et analyse des théories contemporaines. 2nd ed. Paris: Dalloz, 1961. Pp. 517. NF 18.
- RAFFÉE, H. Kurzfristige Preisuntergrenzen als betriebswirtschaftliches Problem—Prinzipielle Bestimmungsmöglichkeiten von kosten-, ertrags- und finanzwirtschaftlichen Preisuntergrenzen. Beiträge zur betriebswirtschaftlichen Forschung no. 11. Cologne: West-deutscher Verlag, 1961. Pp. xii, 203. Paper, DM 22.50.
- SHACKLE, G. L. S. Decision, order and time in human affairs. Cambridge: Cambridge Univ. Press, 1961. Pp. xiv, 302. \$6.50.
- SMITH, V. L. Investment and production—a study in the theory of the capital-using enterprise. Harvard econ. stud. vol. 117. Cambridge: Harvard Univ. Press, 1961. Pp. xi, 340. \$7.50.
- TASKIER, C. E. Input-output bibliography 1955-1960. New York: United Nations, 1961. Pp. vi, 222.
- Saving in India. New Delhi: Nat. Council Applied Econ. Research, 1961. Pp. xii, 188. \$3.

Economic History; Economic Development; National Economies

- BLYTH, C. A. Economic growth 1950-60. Research paper no. 1. Wellington: New Zealand Inst. of Econ. Research, 1961. Pp. 14.
- BREWIS, T. N., ENGLISH, H. E., SCOTT, A. AND JEWETT, P. with statistical appendix by GANDER, J. E. Canadian economic policy. New York: St. Martin's Press; Toronto: Macmillan, 1961. Pp. xv, 365. \$6.50.
- CHARDONNET, J. Les grandes puissances: étude économique. Vol. 2, Le monde (Europe exceptée). 3rd ed. Etudes pol., écon. and soc., no. 12. Paris: Dalloz, 1961. Pp. 804. NF 30.
- CLAIRMONTE, F. Economic liberalism and underdevelopment—studies in the disintegration of an idea. Bombay: Asia Pub. House, 1960. Pp. vi, 344. Original French edition pub.

in the area of industrial organization. Some are for economists who conduct research in the area of industrial organization and behavior. Others are for economists providing economic assistance in the legal case work of the Commission. Vacancies exist for persons qualifying for Civil Service grades ranging from GS-9 to GS-14. Beginning grades and salaries vary, depending on experience and training. Qualified candidates with Ph.D.'s but without experience may receive a beginning grade of GS-11, which has a salary range of \$7,560 to \$8,860. Vacancies exist up to the GS-14 levels for persons with graduate training and with substantial research experience. The salary range for a GS-14 is \$12,210 to \$13,510. Write: Willard F. Mueller, Director of the Bureau of Economics, Federal Trade Commission, Washington 25, D.C.

Industrial organization, trade regulation, industrial concentration, structure of industry, price behavior: The Antitrust Division of the U.S. Department of Justice has openings for economists in Washington, D.C. Candidates should possess a background of education or experience in above fields. Duties involve the application of economic analysis to the enforcement of the antitrust laws. All positions are within the competitive civil service; entrance salaries range from \$5,355 to \$10,635 per annum. Write: Mr. John W. Adler, Chief, Personnel Office, Department of Justice, Washington 25, D.C.

Economics, money and banking, statistics: Jesuit liberal arts college in East, with enrollment of 800, business and economic staff of four, seeks outstanding man, preferably with doctorate, to teach economics, money and banking, and statistics. Rank and nine-months salary (\$6,000 and up) depends on qualifications. Please send complete résumé to: Dean of Studies, Loyola College, 4501 North Charles Street, Baltimore 10, Maryland.

Accounting: A small collegiate school of business in a metropolitan area in New England has a faculty opening in Accounting Department starting fall of 1962. Prefer applicants under 35 with Ph.D. or substantial completion of work toward Ph.D. Full-time position; rank of instructor or assistant professor; no previous teaching experience necessary; salary open; nine-month school year. P245

Economics: A liberal arts college in the metropolitan Chicago area will have two vacancies in its economics department for September, 1962. Appointments will be made at the instructor or assistant professor level, salary and rank dependent on qualifications. Ph.D. degree with strong theory background required. Salary ranges are \$6,000-\$6,800 for instructors and \$7,000-\$8,000 for assistant professors. Courses to be taught for one vacancy include principles, national income analysis, international economics, and history of economic thought. For the other vacancy, considerable flexibility is present and courses will depend on the interests of qualified applicants. Possible course offerings would be in the areas of corporation finance, comparative economic systems, industrial organization, economic growth and development, and economic history. Address inquiries to Professor H. Murray Herlihy, Chairman, Department of Economics, Lake Forest College, Lake Forest, Illinois.

Economics, principles, public finance, foreign trade, economic history: Liberal arts college (Catholic) has opening for a man with Ph.D. or completing requirements, beginning late January or September, 1962. Emphasis on successful teaching. May appoint at assistant or associate professor level. Starting salary from \$6,000 to \$8,000 for nine months. Write: Brother Julius, Dean, St. Mary's College, Winona, Minnesota.

Economic theory: Man, Ph.D. or near Ph.D., to teach principles and intermediate economics in university in north central region. Some teaching experience is essential. P246

Economics: Instructor or assistant professor in large institution located in metropolitan area in eastern U.S. Work at the beginning will include principles and other undergraduate courses. Possible opening in February and September, 1962. Salary will depend on qualifications. P247

Business economist: Economics department of eastern financial institution. Ph.D. in economics and experience in research and business forecasting. Writing skill and experience essential. Major responsibilities include short-term forecasts of general business conditions, regional and industry studies, and some speaking engagements. Salary depends on background and experience. Please send complete résumé and small photo. All replies will be kept confidential. P248

Financial economist: Economics department of eastern financial institution. Ph.D. in economics preferred, with specialization in finance. Research experience and writing skill essential. Position requires ability to conduct independent research on money and capital market developments, with special reference to company operations. Salary depends on background and experience. Please send complete résumé and small photo. All replies will be kept confidential. E249

Economists Available for Positions

Investments, finance, international relations: Man, 57; M.A., M.S., Ph.D. Broad business experience as well as teaching experience, including administration as department head; various publications; presently professor of finance; excellent references. Desires position teaching above subjects. Available in fall, 1961. E962

Marketing, statistics, economic analysis, money and banking, international economics, public finance, history of economic thought: Man, married; Ph.D. dissertation in process. Nearly 15 years of responsible professional experience in directing and conducting economic and marketing research for management. Fellowship; university teaching. Seeks teaching or business position. E975

Economic theory, labor, finance: Man, in 40's. Twenty years of postdoctoral research, writing, and teaching. Primarily interested in graduate level instruction and research. In *Who's Who in America*, *Who's Who in Commerce and Industry*, etc. E980

Economics, money, banking, and finance, accounting, business law, management: Man, 56; J.S.D., Ph.D. Experienced college economics teacher; professional experience in law and accounting practice. Norman S. Lehrman, 1300A Midland Avenue, Yonkers, N.Y.

Business management, business ethics, marketing, public finance, investments, economic principles, business history and trends: Man, 45, married; M.A., work toward Ph.D. Fifteen years in business management; assistant to chief executives. Also some teaching, newspaper and magazine editorial work, and city planning; presently management consultant; publications; conservative leanings. Wishes to devote full time to teaching and writing. E988

Economic planning, research studies: Man; B.S. Economics, B.S. Foreign Trade, M.A. Business. Eleven years of experience in all phases of comptroller; presently a research analyst with a university. Will relocate. Salary open. E990

Labor economics, labor legislation, collective bargaining, labor market, principles, history of economic thought: Man, 40; Ph.D. Twelve years of college teaching experience; government positions; two books and numerous articles and reviews. E1001

Mathematical economics, economic statistics, national income, economic development and growth: Man, 29; B.Com.(Econ.), Dip. Stat., M.P.H. (Biostat.), course requirements for Ph.D. completed and dissertation in progress (expected to finish by September, 1961). Experience in research and teaching. Desires teaching and/or research position. E1004

Marketing, statistics, business and industrial economics: Man, 40, married; B.A., M.A., Ph.D. credits completed. Fourteen years of experience in designing and conducting economic and market research projects; contributor of articles to various publications. Seeks research position with business or industry. E1005

Public finance, labor economics, history of economic thought, comparative systems, principles: Man, 32; Ph.D., September, 1961. Experience in economic research, labor relations, college and extension teaching; Fulbright scholar; member of state arbitration panel. Currently citizenship clearing house fellow in state and local government; special assistant to mayor of large midwestern city on Ford Foundation-federal government community development project. Available in February, 1962, for full-time teaching in college or university. E1006